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In Part I of this report, case studies of the universities of California, Michigan, Illinois and Miami afford a comparison of patterns of administrative planning and organization as they have developed in response to changing social expectations and the problems of growth. These institutions are representative of those that have made a responsible commitment to expansion so that they might accommodate a rapidly increasing enrollment. The extent of the growth problem at each of the selected institutions, and the states' and universities' plans for development are discussed. The institutions' plans are presented for the reorganization of their administrative operations, for improvement of space utilization and teaching efficiency, for the adoption of electronic instructional media, and for changes in the curriculum. Part II contains a general discussion of patterns of planning, the junior college movement, campus building plans; and various methods of enhancing efficiency in the teaching process with reference to specific practices of the 4 universities. (JS)

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THE UNIVERSITY OF CALIFORNIA

UNIVERSITY PLANNING FOR THE PROBLEMS OF GROWTH

BY

JAMES GIBBERT PALTRIDGE
1964

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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PREFACE

New history of the administration of American higher education is being written in this decade. This is an era of unprecedented growth and of an unprecedented challenge. New patterns of administrative planning and organization are emerging, and these have great relevance to the future structure of the American system of higher education.

This report presents case studies of four selected universities and compares and contrasts the patterns of administrative planning and organization which these institutions have developed in their response to the challenge and the problems of growth.

This is not a survey of American higher education through the selection of "typical" examples of planning. In many respects, these four institutions are atypical of the whole of American higher education. They are representative only of those large institutions which have made a responsible commitment to expansion so that they might accomodate an increased share of the burden of a rapidly expanding college population.

In the broad areas of their influence these four institutions are often regarded as models; therefore, it may be expected that in these studies will be reflected in similar patterns of planning and decision-making as they are developed by hundreds of institutions in this decade and the next. Each of these institutions has developed certain policies, plans, and teaching technologies which may well become noteworthy contributions to the history of American higher education in this era. For this reason, we attach significance to these chronicles.

Data of a nature of that gathered for these studies requires inquisitive probing of institutional history and of the rationales which underly pronounced decisions. We acknowledge with thanks the contributions of information made by Lyle Lanier and Charles McIntyre of the University of Illinois; by N. Edd Miller, Stanford Ericksen, Garnet Garrison, and Erwin Hanson of the University of Michigan; and by Charles Tharp, Roy Johnson, Eugene Cohen and President Henry King Stanford of University of Miami. Many colleagues at the University of California have contributed information and ideas, both in specific queries and in Faculty Club luncheon-table conversations. Their help is deeply appreciated.

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INTRODUCTION:

A PERSPECTIVE OF THE PROBLEM OF GROWTH

American Higher Education is viewing with awe the collision course of three great forces, each highly charged by the pressures of society. They are: the numerical expansion of the number of students demanding a higher education, the voluminous expansion of knowledge that is flowing from laboratory and scholars' niche, and the dynamic expansion of Education's service to a modern society.

Quantitatively, the demand for higher education will double. Quantifying measurement of the other two forces is difficult, if not impossible. "Double" probably would be too conservative a measure, in any event.

Numbers, the trademark of expansion, beget complexity. And complexity is threatening the old-time simplicity of scholars and their institutions which American colleges and American universities adopted from their English and Germanic godparents.

Administrative Organization

Governance has become for most universities and colleges the administrative function of an increasingly complex organization structure. It has threatened to outdate the tradition of "collegiality" which is described in a comment attributed to one of the fellows of St. Johns College of Oxford, "On sunny afternoons a few of us fellows gather here in the yard, and over our pipes we take care of such matters of governance as are necessary."[1]

Administration, for the large educational institution, has become a highly specialized professional service--even though the functions may be executed by those whom Etzioni describes as the "semi-experts." These, he says, are former "experts [faculty members] ...with a managerial personality" or "managers" [specialized administrators] who have acquired an academic expertise.[2]

Only in recent decades of this century have theoreticians dared classify the administrators of academia in the same functional are with the administrators of public governments--or, certainly, of industrial and business institutions.

If modern college and university administration is akin to public and business administration it would be well to realize that their administrators are of contrasting origin and kinship is the result of evolutionary developments in each institution which have drawn them to more common ground.

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[1] This apropos story is told by T. R. McConnell, Director of University of California's, Center for the Study of Higher Education.

[2] Amitai Etzioni, Authority Structure and Organizational Effectiveness, Administrative Science Quarterly, Vol. IV, No. 1, June, 1957) pp 54, 56.

Most of today's large commercial institutions originated as smaller firms. Administrators, or entrepeneurs, founded these enterprises. Their organization patterns started with an apex and as the organization grew they added ever-broader layers to the structure of governance between the apex of power and the executors of the organizations' goals.[3]

On the other hand, educational institutions have in their history grown in the opposite manner. They were founded as communities or guilds of students and scholars. Their first governance was a "collegium", democratically almost as broad as the founding group. There was no triangular power structure for there was no apex.

As the demands of society made these organizations more complex, successive hierarchial "layers" (department chairmen, deans, provosts, and presidents) were added to form the triangle. Only recent years have given currency to the notion that the apex of this organization chart marks what is in any real sense a "power center."

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[3] This is not to deny the thesis of Chester I. Barnard (The Function of the Executive, Cambridge: Harvard University Press, 1958) that power in the modern organization structure is "permissive" and flows upward from the executors, or "doers", by reason of their willingness to participate in the organization. We speak here only of the historic fact of genesis and growth of most modern business and public organizations.

As the large universities become larger, as all universities and colleges find themselves competing harder for scarce faculty and scarce dollars, academic administration is certain to take on more of the characteristics of the modern business and political organization.

A perspective of higher education's growth problems may be gained not only through assessment of the physical size of the problem, but through examination of the traditions and social movements which have brought on the problem.

Expansion of Enrollments

Estimates of the volume of students who will be knocking on the gates of the institutions of higher learning in this and the next decade are calculated upon two factors, one of which is known and the other of which can be based on well-marked evidence.

The number of people reaching college age each year until 1980 is a known factor, because the entering freshmen class of 1980 has now been born. Our college-age population will rise from 9,600,000 in 1960 to 14,500,000 in 1970 and to 16,000,000 in 1975.[4]

The other determinent of enrollment growth--the percentage of college-age youths who will actually enter college--seems to have high predictability based on the trend of the 20th Century. The percentage of college-age youth attending colleges and universities has increased from approximately four percent in 1900 to nearly 40 percent.

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[4] See Appendix A

Between 1939 and 1960 the country's population increased by 37.1 percent, but because of the low birth rate during the Depression and War years, the college-age population (18-21) in 1960 was almost the same as in 1939 (only .2 of 1 percent larger). Yet, in 1960 the number of college degree-credit enrollments was more than two and one half times that of 1939. Although the college-age population in 1960 was only 23,000 larger than in 1939, there were 2,216,000 more college enrolees.[5]

A survey conducted for the Ford Foundation in the spring of 1959 by Elmo Roper & Associates showed that 69 percent of the children below the age of 16 are expected by their parents to go to college.[6] Even after allowing for over-enthusiastic parental aspirations, there is evidence that college participation will continue to increase.

Different states and population masses of the country show considerable variance in the proportionate college enrollment of their high school graduates. California, with a long tradition of prodigious higher education recruitment, is estimated to send 57.5 percent of its 1970 college-age population on to institutions of higher learning. Utah, smaller in numbers but with a similar tradition, will lead the nation by sending 59.8 percent of its youth on to college. Other principal population areas of the country are expected to reach the following attendance ratios in 1970: Illinois 42.1 percent, Massachusetts 50.2 percent, Michigan 43.10 percent, New York 51.3 percent.[7] In general, the western and northern urban advanced-industrial areas are the leaders. Rural and southern areas show the lowest ratios. The areas of the greatest higher education growth problems are thus geographically pin-pointed.

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[5] See Appendix A

[6] Elmo Roper & Associates, The Public Pulse, No. 6, September 1959

There seems to be general agreement that demand for college enrollments will increase from approximately 4,000,000 in 1962 to 7,000,000 in 1970; to the neighborhood of 8,500,000 students by 1975.[8] To meet this demand, institutions of higher education will have to accomodate an average of 375,000 additional students each year.

When it is realized that our present educational plant is geared to a college population in the neighborhood of 3,500,000 students, an idea of the problem and the magnitude of the task of preparing for these groups becomes evident.

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[7] Figures, extracted from state tables are quoted in: Ronald B. Thompson, The Problem of Rising College Enrollments, The College Blue Book, Yonkers, New York, 1957.

[8] See Appendix B

The first shock-waves of the college enrollment explosion will arrive with the entering freshmen classes of 1964 and 1965. After low birth rates in the 1930's and early 40's, and actual declines in 1944 and 1945 (which held college enrollments to modest increases until 1963), the birth rate in 1946 increased enormously by 23 percent and increased by another 12 percent in 1947. These incriments, further accellerated by the increasing proportionate college attendance of 18-22 year olds (up more than 1 percent each year), foretell the enrollment explosion of 1964 and 1965.[9] Here are the first painful collisions of the numerical combinations which will being crises and change to the years of the decade which follows.

Expansion of Knowledge

Statistics of predicted enrollment increases do not alone measure the girth of the enrollment problem. There has been expansion of the volume of knowledge to be taught as well as expansion of the number of students to be taught. The mushroom-like growth of knowledge in the last two decades requires our colleges and universities to offer instruction in areas which were virtually non-existent 20 years ago; electronics, oceanography, geophysics, biophysics, astrophysics, microbiology, radio astronomy, group dynamics, and the heretofore neglected rare languages.[10] Kerr points out that the fastest growing intellectual field today is biology, describing it as a "veritable revolution" and predicting that "if the first half of the 20th Century may be said to have belonged to the physical sciences, the second half may well belong to the biological. Resources within the University will be poured into the new biology and into the resulting new medicine and new agriculture..."[11]

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[9] See Appendix B

Instruction in these new fields requires an ever increasing number of new faculty specialists and new and expensive equipment such as electronic computors, radio telescopes, electron microscopes, hydrogen devices and x-ray spectrographs, not to mention thousands of new books for libraries. Most of these requirements transcend the financial means of most colleges and even universities. They must be available, however if students are to be educated in a late 20th Century manner. And this society will demand.

Expansion of Service

Because colleges and universities are in and of the social milieu, they exist to serve that society in many ways. The expansion of non-teaching public services, which have come to be both burden and privilege of universities, is exceeded only by the demand for quantitative expansion of teaching. While it is true of all higher education institutions, it can be safely presumed that the larger the institution and the more prestigeous its academic standing, the greater will be its involvement in services to the public which require major commitments of scholarly manpower, research facilities and building space. No austerity can forego this service commitment, for government and industry are now strongly dependent upon the basic research and scholarly output of universities. And universities, are increasingly dependent upon government and industry as principal resources for qualitative.as well as quantitative expansion. Kerr points out "growth and shifting emphasis and involvement in society all take money; and which universities get it in the largest quantities will help determine which of them excell a decade or two hence."[12]

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[10] John A. Perkins and Daniel W. Wood, "Issues in Federal Aid to Higher Education:, in The Federal Government and Higher Education, Prentiss Hall, 1960.

[11] Clark Kerr, The Uses of the University, Harvard University Press, Cambridge, 1963.

Ability to Finance

That the American economy will be able to meet the growing needs of higher education in the coming decades seems beyond serious question. In 1959, the total expenditures for higher education--capital and operating expenses together--amounted to 4.9 billion or 1.1 percent of the gross national product. By 1970, assuming unemployment of not more than 4 percent and using 1948-59 price levels, the gross national product can be expected to be not less than 700 billion. With approximately 1.5 percent allocated to higher education, funds realized would meet projected costs of $10.7 billion.[13] The problem will be how to make the necessary proportion of national income available to education keep pace with enrollment increases and expenditure needs.

The Commitment to Expansion

The American tradition, dating at least as far back as the Land Grant Act of 1862, has been to provide an educational opportunity to every youth in the land who desires a higher education and is capable of undertaking it. President John F. Kennedy said,

> "Our present American educational system was founded on the principle that opportunity for education in this country shall be available to all--not merely those who have the ability to pay. ...For this country reserves its highest honors for only one kind of aristocracy--that which the founding fathers called 'an aristocracy of achievement arising out of a democracy of opportunity.'"[14]

Another American tradition, just as deeply rooted in democratic ritual, tends to present problems to attainment of this ideal. Colleges and universities, public as well as private, have developed independently, autonomously, and with wide diversity. Millett has observed, The outstanding characteristic of the American system of higher education is that it is not a system at all. There is no common pattern of curriculum, instructional method, or organization..."[15] This tradition of diversity and autonomy inhibits coordinated planning, diminishes efficiency, and dilutes financial support of higher education at all governmental and other financial-source levels. Yet it is our "system", and Americans would have no other. Broad strategy for coping with education's growth problem must take account of this fact of life and seek ingenious solutions.

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[13] Alvin C. Eurich, "Increasing Productivity in Higher Education:, in Higher Education in the United States, ed. Seymour E. Harris, Harvard University Press, Cambridge, 1960. See Appendix C.

[14] President John F. Kennedy, Message on Education, The White House, January 29, 1963

Building higher fences with restrictive admissions policies does not answer the problem for the institution of higher education as a whole. Answer, if there is one, must be found in deeper probes of society's requirements and of education's highest purposes. McConnell points out, "Educators might as well face the fundamental fact that they will not determine how many young people will go to college. In the long-run, society will make that decision." And Knight with logic concludes:

> Within a very few years... the pressures upon calm insight will be nearly intollerable; the demands for student spaces, additional faculty,

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[15] J. D. Millett, "Colleges Must and Can Be More Efficient," in Planning College Policy for the Critical Decades Ahead. College Entrance Examination Board, No. 5, 1958.

[16] T. R. McConnell, "Education 1975--Higher Education" in Hubris, Man and Education, Union Printing Company, Bellingham, Washington.

> proper plant, will leave us no time to look beyond our immediate obligations. It is not too strong to say that unless we define our purposes with complete clarity now, we shall find ourselves hopelessly and dangerously confused by 1970...[17]

Preparedness for Expansion

By and large, American higher education will not be ready to cope with this problem. With some notable exceptions, public and private institutions at this late date have not been able to impress their governing boards or state legislators with the need to plan, to finance and to build in anywhere near sufficient quantities to meet the challenge of this coming decade. It is predictible that many a trustee board and state legislature convening in January of 1965 will hear pleadings for expanded facilities and the need for greater opportunities for higher education and will squirm under the political pressures of parents of college-age youths who could not be admitted to the college of their choice, or perhaps to any institution. That so many of these rejectees will be educationally and intellectually qualified, motivated to college attendance but disappointed in not being accepted, will be the disaster of the times.

Even if "crash programs" become the vogue of the last half of this decade, it is doubtful that higher education institutions who attempt such programs can get in step with the trend and at the same time retain their educational standards.

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[17] Douglas M. Knight, "Purpose and Policy in Higher Education", The Federal Government and Higher Education, Prentice-Hall, Inc., 1960.

A false sense of security may be gaining some currency out of predictions that seem to say, "If we can find some way of muddling through the rest of the 1960's, the 1970's won't be so bad."

The enrollment crisis facing colleges and universities from 1964 through 1970 cannot be regarded as a problem similar in any way to that of the postwar years of 1946 through 1951, and hence one which will be dispelled after a few years of crisis. None of the predictible temporary features of those postwar enrollment expansions are present in this crisis. For higher education institutions to react to the crisis of the 1960's with any of the patterns of response of the 1940's would be an unthinkable misreading of the social and economic trends of our times.

Attitudes Towards Expansion

If the tasks which higher education will be asked to assume in the remainder of this decade are great, the attitudes of the participants who must share these tasks is the key to their magnitude.

With all the community of interests, there is divergence of viewpoints within academia. Faculties are conservative, sometimes tend towards self-serving decisions of recommendations. Administrators are impatient; approach many decisions with frustrating ambivalence. Trustees can be meddlesome or misdirecting. Legislators and other holders of the purse strings sometimes attempt to impose unacceptable conditions with their dispensing of necessary resources.

The American college faculty is both "community of scholars" and a "bureaucratic organization of professionals." Its interests are uncompromising, its influence determinative.

The all-important position of faculty in the era of change and the era of growth was dramatically detailed by Clark Kerr in this third Godkin Lecture at Harvard in 1963:

> Change is a traumatic experience for an academic community, as for others. The Yale faculty in 1828 rejected in theory, while approving in reality, that colleges '...by being immovably moored to the same station... serve only to measure the rapid current of improvement which is passing by them'. (Kerr quotes the Yale Annual Report of 1828).
>
> In a very real sense the faculty is the university--its most productive element, its source of distinction. The faculty members are properly partners in the enterprise with areas reserved for their exclusive control. Yet when change comes it is rarely at the instigation of this group of partners as a collective body. The group is more likely to accept or reject or comment, than to devise or propose.
>
> Institutional changes are coming, however, in areas under faculty control or influence. Some of the needed revisions will be troublesome. In many places, curricula and calendars will need to be restudied; undergraduate teaching renovated; faculty concepts of equality of treatment revised; mechanization of some elements of instruction installed; some fields of study revolutionized. These changes will come in the face of much faculty hesitation and even some resistence.[19]

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[19] Clark Kerr, op. cit.

The main gate key to the problems of growth is the degree of practical responsibility which will be assumed by the faculties for the broadest educational goals. The faculty must be leaders and they must share the responsibility of enlightened leadership in formulating administrative policy that embraces pedagogic efficiency and that is tuned to the modern era of growth.

However resistant to compromise faculty attitudes may be, the decisions of administrators must reflect directed leadership. This is essential, whether the role of administrator is that of the "mediator" in a faculty-administration decision-making area as described by Kerr of California, the "academic leader, the first among equals" envisioned by Millett of Miami, the vigorous "man of management" as seen by Stoke of Queens College, or the "caretaker" role described by former President Dodds of Princeton.[20]

The administrator must initiate, stimulate, and guide decision-making action. Problems of the enrollment-growth era are impatient of delay in reaching good solutions. The nature of these problems is such that they will reach some solution whether administrators guide the solution or not. The children have been born, they are now reaching college age. The matter of whether they receive adequate college or university training will be solved, and the decision of where and under what conditions this training will be given will be made regardless of the wisdom or directed influence of college and university administrators. Here is the challenge for a peculiar style of leadership.

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[20] See Clark Kerr, op. cit., J. D. Millett, The Academic Community: An Essay on Organization. New York, McGraw-Hill, 1962, H. W. Stoke, The American College President, New Yor, Harper and Bros., 1959, and H. W. Dodds, The Academic President--Educator or Caretaker? New York McGraw-Hill, 1962.

The organizational and administrative patterns for each institution must be drawn to provide maximum operating efficiency within the framework of its traditions and the attitudes and legitimate interests of its faculty and administrators. There can be no generally-applicable pattern for administrative organization or administrative efficiency.

The diversity among institutions, the great variance of educational goals, the variables of size, sponsorship, position of prestige, wealth or lack of it, are all factors which will shape the optimum form of organization. But perhaps the most determinative factor is that of personality--the historic "personality" of the institution and the human personality of its authoritative leader. This is true whether that leadership is legitimatized under formal title and office, or whether it simply operates through convenient and accepted channels of communication between the knowledge producers and the providers of the necessary resources.

The attitudes with which lay governing boards and state legislatures approach the problems of higher education are strongly determinative of the nature of whatever solutions are found. If the decisions which guide financial husbandry are made in an atmospehre of expediency rather than ultimate goal-oriented progress, neither real progress nor worthwhile existence will result.

Educational Goals

Important as they may be, funds alone do not provide the answer to higher education's problems. College enrollments in the next decade can, and probably will, double in number. This amounts to the building of another whole higher educational establishment, equal in size to our present, on top of the institution which has grown to its present size over a period of two centuries. Funds must be provided and spent only in relation to the answers they give to the questions of what kind of an institution this new establishment will be, what are to be its social aims, what are to be its educational goals.

Solution of the problems of growth for individual institutions and for the whole institution of American higher education starts with the requirement of improvement in the quality of undergraduate teaching. Simply more teaching will not suffice.

Quantity of teaching and quality of teaching are interdependent.

Modern society and modern technology are demanding not only more baccalaureates, but increasing numbers of professional degrees and doctorates, as well as scholars and researchers who will follow post doctoral training programs. To supply its own demand for increased faculties, universities and colleges must expand their graduate instructional programs. To support this vast organizational super-structure of graduate education, the supply of baccalaureates must be increased in quality as well as increased in quantity. Society's demands and the requirements of higher education institutions are thus amalgamated. A high-scale quality of teaching is demanded by a more complex and more sophisticated society. It is also required by educational institutions if they are to continue the production of knowledge in and for today's complex world.

The history of the conflict between the quality of undergraduate teaching and the growth of graduate research and education goes back as far, perhaps, as the opening of Johns Hopkins University in 1876 when for the first time a new emphasis was placed on research and discovery as the high function of an educational institution. McGrath argues that the decline of general liberal education "parallels almost exactly" the asendency of specialized graduate schools.[21] Orlans bitterly comments on the deterioriation in the ranks of undergraduate teachers, claiming that:

> The staff that teaches solely in the undergraduate college of the great universities seem to consist mainly of young men awaiting advancement, older professors surviving from days when undergraduate teaching was more esteemed, women, foreigners, able but doctorless souls, mediocrities with doctorates, and others who, for one reason or another, belong to the legion of the academically disenfranchised. Perhaps the most useful and respected are the good teachers who enjoy associating with and influencing undergraduates, but have never quite made the grade in the merciless world of independent scholarship.[22]

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[21] Earl J. McGrath, The Graduate School and the Decline of Liberal Education, Teachers College, Columbia University, 1959.

[22] Harold Orlans, The Effects of Federal Programs on Higher Education, The Brookings Institution, Washington, D.C., 1962.

As American higher education seeks to grope with the problem of growth, it must simultaneously grapple with the problem of impriving the quality of undergraduate teaching for the two problems cannot be separated even if the moral obligation to present the best possible quality of education is ignored.

Faculty Shortages

Faculty shortages compound the problems of expansion of education as well as improvement in the quality of education. No subject is more debated among educators than the extent of the present and pending faculty "shortage" and its implications for academic standards.

Recent surveys of the faculty shortage problem by McGrath and by Berelson report that most college presidents are finding difficulty in filling staff positions, especially in mathematics and in the sciences. Of the 503 college presidents replying to McGrath's question, "Have you had difficulty in the past several years in obtaining properly qualified teachers?", seventy-five percent said "Yes" or "yes, in certain fields"; of the 601 college presidents responding to Berelson's question "Have you experienced any unusual difficulties in getting qualified college teachers for your staff in the past few years?" Eighty-one percent said "Yes".[23]

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[23] See Earl J. McGrath op. cit., and Bernard Berelson, Graduate Education in the United States, McGraw-Hill, 1960.

In the state of California alone it was estimated that between 1959 and 1975 a total of 54,424 new full-time faculty members must be recruited to meet the estimated demand based on porjected student enrollments in that State's public and private institutions of higher education.[24]

The competition for faculty members is certain to be intense. Salaries will continue to rise and fringe benefits will be granted in efforts to retain personnel. There will be intensified competition with industry and with government. Teaching loads will be competitively reduced, and as they are reduced they will add further to the burden of the faculty shortage.[25]

Kerr is of the opinion that this phenomenon may be of relatively short duration, lasting, perhaps for the remainder of this decade. He sees faculty salaries catching up with income in other professions, and by 1970 the deficit of PhD's turning into a surplus.[26] This hopefull prognostication, however, is not shared universally among scholars in the field.

Helping in some measure to relieve this problem, but at best contributing a relatively small measure of the needed relief, is the current movement towards further mechanization of the media of instruction through language laboratories, teaching machines, and television. Such efforts improve the quality and save faculty time for other endeavors, including more individual work with students.

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[24] California Master Plan, op. cit.

[25] Kerr op. cit.

[26] Kerr, ibid.

Changes of some sort are mandatory, for in this era no institution can remain the same by merely resisting change.

New Organization Patterns

On the broad outlook, there are perhaps three alternative ways to conquer the problem of doubled enrollments. The size of each and every institution could be doubled, with each institution absorbing its "share" of the increased load. The number of institutions could be doubled. The operating efficiency of present institutions could be doubled, some claim, through internal adjustments and reform and by adding "plant capacity" only as other means are exhausted.

The problem undoubtedly will not be solved by any of these alternatives, singly. The first two ignore the economic facts of life as well as most other practical considerations. The second does hold the attraction, ephemeral though it may be, of maintaining more of the status quo for the older institutions. The third alternative is probably not a complete answer to the problem, but it does encompass the area in which many productive measures will be taken.

The pattern of higher education in the 1970's will undoubtedly reflect, in some measure, each of these three patterns of expansion.

Regardless of the path or paths which will be followed, major attention will have to be given to the organizational patterns and administrative structures. Much more research is needed to wisely establish administrative policies and educational standards regarding class sizes, laboratory usage, teaching techniques, and administrative procedures. In this connection, Thompson warns "It may be that, if we are to continue to make higher education available to ever increasing numbers of youth, the type of education we give these young people should be modified." He raises such questions as should the present framework of four-year undergraduate education and the present system of professional education be continued? What is the optimum size for each specific type of school? Shall the present colleges and universities be expanded, new ones established, or shall the number of students permitted to attend institutions of higher education be limited to existing facilities? Is there an optimum-maximum size for specific types of schools? Are our present colleges and universities located in the most logical centers for further development, or should new centers of education be established in light of population shifts?[27] But lacking, as

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[27] Ronald B. Thompson, A Time for Decisions in Higher Education, in "A Call for Action", American Council on Education, Washington D. C., 1959

Millett suggests, an American system of higher education,[28] who is to answer these questions, what authoritative body is to make the necessary decisions?

Under the characteristic American tradition of diversity and autonomy, these major questions will find their own answers. They are answers that will be given by the forces of a dynamic society acting through the pressures and directions of its higher education demands, its individual and collective educational requirements, the forces of the economy and technology, as they expand and evolve over the next decade.

Some purposive guidance can be given to the direction of these decisions through pragmatic development of sound organization plans and policies which will guide those changes which can be predicted.

Summary

Current problems of growth in higher education are the expected result not only of a major population increment, but of the increased demands, an increasingly urban, sophisticated, highly industrialized society is making on its youth and on its institutions of higher learning.

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[28] Millett, *op. cit.*

The educational tradition of "democracy of opportunity",
and our peculiar culture's tradition of independence, autonomy and diversity of educational institutions both sets the challenge and confounds the logic of "planners."

The forces of society decree that solution to this problem will be found, whether through purposive planning of educators or through crisis that will bring accommodation in some less socially beneficial manner. The challenge is not "Will we educate our youth?", but, "How well will we educate them to better meet the high goals of this dynamic society?"

Many patterns of organization and of goal-directed action are evolving from an interegnum of confusion, delayed recognition of the size and nature of the problem conflicting attitudes, and reluctance to change long-standing traditions. Change is inevitable, for there can be no maintenance of the "status quo" in an evolving culture.

American higher education faces decisions not of whether to change or of how to change--but of whether to plan and direct this change, or have change forced upon it by the irregular pressures of society.

PART I : Case Studies

CHAPTER I

THE UNIVERSITY OF CALIFORNIA

Giant among American institutions of higher education, the University of California now faces the greatest challenge in its history.

Already the largest single public University, with 64,640 enrolled students, it faces the charge of doubling its size in this decade. Its challenge is to absorb that growth and to retain the essential nature of its historic goals, the same spirit in scholarship and research, the same tradition of autonomy in the direction of its destiny.

It will be impossible for this complex to escape change; for it must change to remain the same.

The gigantic planning for this change has been the subject of and the model for much of the discussion and much of the planning of its colleagues in the field of higher education.

The Size of the Growth Problem

Since 1950 California's population has rocketed from about ten and one-half million to something over seventeen million. By 1970, its demographers say, it will have increased to more than twenty one million, and this trend will not stabilize in the decades immediately thereafter. It will increase to twenty nine million in 1980, thirty seven million in 1990 and forty five million in 2000, when nearly three times the present population will reside in the state.

By 1975, projections of the State Department of Finance indicate, more than one million students, 666,000 attending full time, will be enrolled in California universities, colleges and junior colleges. This is three times the current enrollment. It is, indeed, nearly one-third of the present total of college students over the entire nation.

Assuming continuation of existing policies, and assuming also that the campus plant facilities will be provided, the State of California and the University of California predict the educational task of the remainder of this century by the data in the following table:

"Status Quo" Enrollment Projections for Higher Education in California

Year (1960)	Population* (15,530,000)	Full-time Enrollments in Higher Education** (276,000)	Enrollments in University of California*** (49,169)
1965	18,450,000	400,000	77,000
1975	25,320,000	666,350	118,900
1980	28,520,000	765,000	137,000
1985	33,500,000	868,000	157,000
1990	37,500,000	972,000	177,000
1995	41,600,000	1,075,000	196,000
2000	45,100,000	1,169,000	214,000

*Projected to 1980 by Dr. Carl Frisen, Department of Finance demographer, and to 2000 by Dr. Van Beuren Stanbery.

**College enrollment projections assume increases only at the same rate as that of the increase in total population. This is an extremely conservative assumption.

***University enrollments shown are the projections based on the restrictive provisions of the Master Plan agreement.

How quality of education and range of opportunity can be supported for these vastly increased numbers of students, and without wasteful duplication and crippling expenditure of public funds, is the crisis the State of California faces.

This is the crisis which lead Californians to commission studies of this impending problem as far back as 1945--studies which culminated in the Master Plan for Higher Education in California and passage of the Donahoe Higher Education Act of 1960.[1]

California Master Plan for Higher Education

With the expansion of California's population during and following World War II the eminent need for coordination of planning of higher education was forseen. The Regents of the University and members of the State Board of Education voluntarily formed in 1945 the Liaison Committee on Higher Education, made up of representatives of both boards. This Committee has guided higher education policy of the State and provided the basis for all subsequent actions by the governing boards and the State Legislature.

One of the earliest studies sponsored by the Commission was the Strayer Report of 1948, which gave Californians their first reliable glimpse at the magnitude of the postwar problem. Its specific recommendations of new state colleges and of the expansion of the University were accepted in principle by the Legislature.[2]

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[1] See *A Master Plan for Higher Education in California, 1960-1975.* Prepared for the Liaison Committee of the State Board of Education and The Regents of the University of California. Berkeley and Sacramento, 1960.

[2] *A Report of A Survey of the Needs of California in Higher Education, 1948*, California Ligislature, Sacramento, 1948.

Later studies revaluated the Strayer findings. Principal among these was the "McConnell Report" of 1955, which provided for the more orderly planning of new state college campuses and for the rejection of institutions in localities where they were unwarranted. The Re-Study provided discrete definitions of the functions of each of the three segments of higher education in the state--the University, the State Colleges, and the Junior Colleges.[3]

In 1959 a third study dealt further with the priority lists for new State Colleges and campuses of the University as well as a list of areas in which junior colleges were needed.[4]

When the 1959 session of the Legislature introduced twenty three bills, three resolutions, and two constitutional ammendments relating to the establishment of new higher educational institutions and changing the functions of existing ones, the Legislature tabled these actions and unanimously approved a resolution requesting the Liaison Committee to:

> ...prepare a Master Plan for the development, extension and integration of the facilities, curriculum, and standards of higher education

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[3] A Re-Study of the Needs of California in Higher Education. California State Legislature, Sacramento, 1955.

[4] A Study of the Need for Additional Centers of Public Higher Education. Sacramento, California, California State Department of Education, 1957.

> in junior colleges, state colleges, the University of California, and all institutions of higher education of the State, to meet the needs of the State during the next ten years and thereafter...[5]

"A Master Plan for Higher Education in California, 1960-1975" was presented in February, 1960. A special session of the State Legislature in that same year incorporated most of its recommendations in the Donahoe Act.[6]

The Master Plan strictly defined the functions of the three segments of higher education in the State so as to diminish duplication of efforts between Junior Colleges, the State Colleges, and the University. It created a State college system with its own trustees and its own chief executive officer and staff. It created a permanent 12-man Coordinating Council to advise the Governor, Legislature, and the three systems of higher education on matters of finance, program development, and new campuses. It proposed a number of detailed plans for meeting estimated enrollments. Among the latter were provisions for tightening entrance requirements at the University and at the State Colleges and broadening the enrollment capacity of Junior Colleges so that they might handle more lower division students for increasing state support for the Junior Colleges, and for payment by students of all costs of non-educational student services offered by the systems.

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[5] Assembly Concurrent Resolution No. 88. Statutes of California, 1959

[6] op. cit.

The Master Plan dealt also with the student capacities of existing institutions and provided a broad outline for expansion of these institutions and the addition of new ones. It dealt with the problem of faculty supply and demand and made recommendations for recruitment of this faculty. It proposed a delineation of functions in the area of adult education among the systems. It surveyed the costs of higher education and of the state's ability to finance the proposed programs.

The Master Plan as Related to The University

The Master Plan clearly defines the higher instructional role of the University and specifies it as the primary state supported academic agency for research, both basic and applied; as the primary public repository for unique library resources; as the arbiter of standards and conditions for the awarding of doctoral degrees and gives it sole responsibility for instruction in the professions of law and medicine.

Adoption, through Legislation or by agreement among the institutions, of most of the recommendations of The Master Plan gave the University a solid foundation for its own planning activities during the early years of the new decade.

University Planning for Growth

Four basic planning projects have been the basis for the University's planning for its years of growth.

Growth Plan: A Recommended Plan for Growth for the University of California was the first planning document presented by the President to the Board of Regents.

This Plan set forth a number of basic guide-lines for the policy decisions which would prepare the University for its era of growth.

It stated that opportunity for University education in California would continue to be available to all qualified students.

It confirmed that the University would continue to accept students on the basis of the Master Plan recommendations, though it would gradually restrict its lower division enrollments so that by 1975 they would constitute only 41 percent of the total number of undergraduates.

It proposed that prospective students be directed from one campus of the University to other campuses where more capacity might exist.

It determined that all campuses, existing or yet to be established, with the exception of the San Francisco Medical

Center, would be developed as general campuses offering undergraduate liberal arts instruction, and graduate and professional programs. Even the San Francisco Medical Center was proposed to have its area of concentration broadened to include upper division and graduate work oriented toward the biological sciences.

It proposed new maximum enrollments for existing campuses, setting top limits of 27,500 students at the two largest existing campuses and at the three new campuses, and somewhat lower limits at the four other campuses.

It affirmed the principle that no University campus would be permitted to grow at a rate which would imperil its academic standards and for purposes of planning, average rates of growth in enrollment for each campus were established. It pointed out that growth must be anticipated by adequate academic planning, by recruitment of adequate faculties, and by acquisition of libraries and all the other facilities that must precede admission of the established quotas of students.

On June 17, 1960, The Regents of the University accepted the President's report and approved it in principle as a policy guide for planning.

The University Academic Plan: Following adoption of the Recommended Plan for Growth, the University proceeded with the completion of an Academic Plan. Preliminary drafts of this document had been developed in the earlier years, and with the guide lines of policy now established, the Plan was re-drawn and presented to a joint meeting of the Committees on Educational Policy of The Regents and of The Academic Senate. It was approved in principle in July of 1961.

The Academic Plan delineates the particular functions of the University, presents the latest estimates of future University enrollments (revised from the earlier Master Plan estimates), and details the academic provisions that must be made for additional library resources, and other facilities for teaching and research.

It again states the principle that the University accepts responsibility to expand its facilities to accomodate all qualified applicants in fields appropriate to the University. This, it stated, would be done in five ways: (1) by expanding existing campuses; (2) by developing new campuses; (3) by eliminating inappropriate and needlessly duplicative teaching activities; (4) by cooperative use of facilities, including doctoral degrees awarded cooperatively with State Colleges; and, (5) by incorporation of the summer months into the regular academic calendar.

The Academic Plan, in further and later amplification, provides for individual Academic Plans of each campus. These are prepared by the campus Chancellors and the campus Academic Senates and are subsequently approved in principle by The Regents. These plans reflect the individual academic character of each campus. This diversity is unified by the framework of policy standards set forth in the Statewide University Academic Plan.

Plans for Campus Development: Each campus, working with its locally selected consulting architects has developed, or is developing, a Plan for the development of its physical facilities which will accomodate the projected student enrollments and which will house the areas of teaching, research, and service activities that will be required. These Plans are developed for step-by-step fulfillment of the planned rate of growth and are modified from time to time as specific new academic projects are approved and as funding is secured. Projects formerly approved in principle by The Regents are placed in planning schedules allowing in each case for appropriate "lead time" for preliminary planning, funding under University-wide priorities, and construction in time to meet the anticipated enrollments.

The long-term development of the basic teaching facilities for each campus is, of course, dependent upon the continuing funding capacity of the state government. The State, through its passage of the Donahoe Higher Education Act and its approval of the provisions of the Master Plan, is committed in principle to the whole long-range development of the University to meet its projected enrollment expansion program. Towards this end the citizens of the State, in a special bond election in 1962, approved the obligation of $270 million for higher education building expansion, of which $102 million was earmarked for construction for the several campuses of the University. Within a very few years the bonding limits provided by this enactment will have been reached, and the University, together with the State College System anticipate going again to the electorate with a request for additional funding. On these future funding projects rests the ultimate fate of the development of California's higher education system as blueprinted in the Master Plan.

Administrative Reorganization of the University: Concurrent with development of its long-renge academic plans and its campus development plans, the University recognized that extensive administrative reorganization was necessary. In November, 1958, upon the recommendation of President Kerr, the Board of Regents adopted a plan for administrative reorganization. This plan was developed after comprehensive study of the administrative structure of the University by a firm of professional management consultants.

This plan of reorganization was based on the principles that uniform University-wide policies needed to be crystalized for all major areas of development, that the President's role as the chief executive officer needed to be clearly established; and that the statewide staff needed to be realigned and strengthened to concentrate on overall planning, policy formulation, and review of performance. These were necessary prerequisites to moving forward to greater decentralization of operating responsibility.

This plan established that the University as a single entity would remain intact; and that, within that entity, operating responsibility for each campus would be decentralized to the Chief Campus Officer. It was anticipated that decentralization of operating responsibility would substantially expedite local action thus improving the effectiveness and morale of the organization at all levels.

To provide a channel of communication and assure interaction between the statewide administration with its policy-making functions and the Chief Campus Officers with their executive functions, a President's Council of Chief Campus Officers, under the chairmanship of the President, was established to discuss all major policies.

Under the principle of decentralization, the statewide administration has major responsibility for developing policies to guide the activities of the various campuses. Within these statewide policies, the local campuses have responsibility for their campus activities. Decentralization also made necessary certain changes in the historic structure of the Academic Senate, so that its role in developing University policies could be geared to the new administrative structure.

A President's Cabinet, consisting of statewide University officers under chairmanship of the President, was formed to provide an advisory function parallel to that of the President's Council of Chief Campus Officers in relation to statewide policy matters. It also functions as the coordinating unit for the major activities of the several units of statewide administration.

Plans for Increased Operating Efficiency

While the University's chief weapon of attack on the growth problem has been that of massive organization of its planning activities, backed up by the long-range commitment of its primary funding source--the State Legislature, the University has sought also to launch an attack on the problem through improvement of its internal operating procedures and instructional systems. In their gross effect in relation to all the measures which eventually will be necessary to cope with the growth problem, it is difficult at this stage to evaluate the effect of these internal efficiencies. In the heady stmosphere of planning the development of cow pastures into 27,500-student university complexes, many of these measures probably haven't been given the attention they will receive when the full crush of enrollments has taken its toll on strained plant capacities and on traditional patterns of academic practices. Planning in these areas has progressed, though in many cases circumstances have not yet required, nor inspired substantial movement toward change.

Year Round Teaching: The possibility of fuller utilization of the calendar has been under discussion within the University since at least 1957. The problems involved in reaching a conclusive decision on this matter have been many and complex, and, with a few exceptions, not unlike the problems faced by other universities across the country in their considerations of the matter. Concurrent discussion by faculty, students, administration, and Regents--and advisory polls of these groups--have been conducted in the last year.

The Master Plan recommended that every public institution of higher education offer academic programs in the summer months, and that the Coordinating Council make a study of three-semester and four-quarter schemes and recommend a calendar for higher education in the State. In February, 1961, The Regents approved in principle year-round operation for Berkeley and Los Angeles. In June of 1962, The Regents approved postponement of the year-round operation. The problem of articulation of the University calendar with those of the State's secondary schools, State Colleges, and Junior Colleges presented one of the obsticles to decision in this area. The second obstacle was that of the sharply divided opinions of the many bodies concerned--faculty, students, and administration--over the relative merits of the trimester and quarterly semester plans.

Definitive action was finally concluded in October 1963 when the Coordinating Council on Higher Education made its determination and recommended that the University and the State Colleges all convert to a quarter system by 1965.

Space Utilization: The Master Plan recommended that classroom space utilization "...be at the maximum practicable levels, but in no case... less than 30 weekly class-hours per room, with a station occupancy within these rooms of 60 percent, and a station-utilization rate (weekly student-hours per station) of 18 hours. During the period of maximum building activity in recent years, room-utilization indices have fluctuated, and this will probably be the case until the campuses approach their maximum enrollments or until the greatest effect of the new enrollment increase is felt in the latter part of this decade. In Fall, 1962, the median room-utilization rate for the five general campuses of the University was 30.6 hours, the station occupancy at 50 percent and the station utilization rate was 15.5 hours per week. In each case these figures represented appreciable improvements over the utilization factors of the four previous years.

Electronic and Mechanical Teaching Media: Instructional television, electronic "language laboratories", and programmed teaching devices each hold promise for contributing to the operating efficiency of the teaching process. The University has been developing facilities and experimenting in these areas since 1959.

Instructional television facilities have been installed on six campuses and are planned for each of the three new campuses. Emphasis is placed on their use to improve the presentation of instruction as primary to their effect in developing lower costs or faculty manpower savings.

Use of this medium has been concentrated mainly on courses of large-enrollment and those courses where repetitive lecturing has been necessitated to accomodate student schedules or over-flow enrollments. Efforts are made to influence the use of this medium primarily in courses with more than 200 student enrollments where the course is taught in multiple sections of 50 or more students per section.[7] In such cases, a single instructor, by using television, is able to teach all enrolees in a course and thus relieve other faculty members to teach classes in the upper division and graduate levels or, in the case of the emerging general campuses, to teach the new graduate programs which are being added into most academic department areas.

In the Spring 1963 semester, televised lectures and laboratory demonstrations were used in 20 courses of instruction on a full semester basis, plus another 20 medical teaching programs at the San Francisco and Los Angeles Medical Centers. The medium is also used extensively in the larger classrooms, particularly science classes, where working demonstrations or microscopic materials are needed to be shown to illustrate lecture content. Approximately 6,800 students were receiving some instruction by television.

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[7] See J. G. Paltridge and J. Harr, Potentials for Educational Television in the General Campuses of the University of California, University of California report, unpublished, 1961

Electronic "language laboratories" have been installed at four of the five general campuses, and their use in elementary language instruction is increasing. Some experimental work is being done in the use of televised language lessons projected into the conventional language laboratories to determine if such utilizations can reduce the amount of instructor manpower needed in elementary language teacing.

It is felt that programmed instruction devices will hold some promise or relief to the growth problem if they are utilized in organized programs of self-paced instruction and independent, non-classroom study. To date experimental efforts along these lines have been sparse and not altogether successful.

An interesting example of how instructional television is planned for use in one of the new campuses is the projected plan for teaching survey science courses at the new Santa Cruz campus. This campus, which will open in 1965, will consist of clusters of small residential colleges with 800 to 1200 students and most of the teaching will be done by the instructors and fellows of each college. In order to avoid costly duplication of laboratory demonstration facilities at each college, the survey science courses will be taught by means of lectures and demonstrations televised in a central campus science center by an authoritative scholar in each field. The lecture-demonstrations will be transmitted by television to the individual colleges where students will meet with their instructors to view the lectures and conduct recitations in a "team teaching" plan.

It cannot be said that use of these teaching media has to date resulted in major instructional efficiencies. However, the introductory work has been done in preparation for the time when the growing campuses will feel the pinch of enrollment expansions--which will most probably come in the latter part of this decade.

Summary

The numerical growth volume and the percentage growth rate challenging the University of California is unprecidented in the history of American universities. It is greater than that facing any other university, public or private, in the nation.

This study of the University's response to the problem of growth is essentially a study of gigantic statewide planning, implemented to date by correlative University planning of its organizational patterns, its administration-faculty relations, and of its long-range building program.

The University's planning task has been sub-divided into a series of individual plans for each of its nine campuses.

In the sense of the concepts of "external" and "internal" planning for growth, this University's planning has been more of the "external" variety. It has looked first to those plans which utilize funds from external sources, primarily the tax-support funds made available by the State Legislature, and by proceeds of capital bonding referendums. It is, as well, looking first to those measures of organization which give appropriate response to external forces such as the competition for qualified faculty, the particular needs of different social and professional cultures in different areas of this large state.

"Internal" planning, in the sense of its application to measures of internal operating efficiencies and other plans which depend upon the institution's own resources for implementation, has been given secondary emphasis in the initial planning procedures. These "internal" plans center largely on methods for obtaining greater effieciency in the use of physical plant facilities, and in the use of available teaching manpower. Such areas are not necessarily being neglected. Strategy is perhaps based more on the decision to emphasize physical and quantitative expansion in the first great wave of enrollment growth when classroom spaces are absolutely essential and when the public and their legislators are more responsive to appeal for funds to meet the newly visible crisis. Certainly, this is a strategic first step.

That the time will come when the University will have to depend more on these internal measures, seems a certainty. It seems more certain when consideration is given to the extended period of time over which continuing growth will take place in this state.

CHAPTER II

THE UNIVERSITY OF MICHIGAN

Michigan's historic University at Ann Arbor dates from 1817. It had become one of America's distinguished centers of learning almost a half century before the founding of most other institutions west of the Atlantic Seaboard.

As a state university, it shares with only a few other publicly-controlled institutions the distinction of having an autonomous constitutional status which has kept its academic culture free of many of the traditional constraints that too often have been the lot of state universities. The unhappy paradox is that this institution, so favored by academic autonomy, in the past decade has been subjected to a fiscal heteronomy under the pressing financial burdens of the sponsoring state government. Planning its particular role among other leading universities in meeting the challenge of growth has therefore been subject to an unwelcome external force.

Despite these travails, the University of Michigan has jealously maintained its tradition of excellence among the nation's finest centers of learning.[1]

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[1] See Bernard Berelsen, Graduate Education in The United States, New York, McGraw-Hill, 1960

Happily, the tide of the very recent years seems to give new hope of a degree of fiscal solidarity which will enable the publicly-controlled universities and colleges of this state to better meet their social and educational obligations of the coming years.

The Size of The Growth Problem

The Michigan Legislative Study Committee on Higher Education reported in 1958 that the Michigan institutions under state control, as a group, were expected to increase the number of students enrolled by about 40 percent by 1965 and 73 percent by 1970. The privately controlled institutions in the State estimated total enrollments for 1965 at 56 percent above those of 1957, and for 1970 the estimates are 93 percent above 1957.[2] ✓

As contrasted to the growth picture of California and that of most other states beyond the north Atlantic Seaboard the privately controlled institutions in Michigan will apparently absorb a major share of the growth burden, if trends continue and predictions prove true. Even up to 1970, the privately controlled institutions are estimating their enrollments at a faster rate of increase than the state controlled institutions.[3]

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[2] See John Dale Russell, Higher Education Michigan, The Final Report of the Survey of Higher Education in Michigan. The Michigan Legislative Committee on Higher Education, Lansing, Michigan, 1958.

[3] Russell, ibid.

State Planning for Growth

Recognizing the desirability of statewide coordination and planning in higher education, the presidents of the nine state-controlled Michigan institutions of higher education have maintained an informal organization known as the Michigan Council of State College Presidents. It has commissioned a series of studies of projected enrollments and studies of educational space utilization. These studies served largely to point up the nature and direction of the problem facing the Michigan institutions, but due to uncertain conditions in the state, they were unable to provide long-range plans.

The John Dale Russell study of 1958[4] recommended the expansion of the network of local public junior colleges and stressed the amounts of money the public and private institutions at all levels would need to keep abreast of the rapidly increasing obligations during the next ten years. This report also recommended more coordination between the state's higher education institutions.

Progress has been made in recent years in the development of new junior colleges under local community support. These are now sixteen in number. A new state college near Grand Rapids, the only new public state college founded in recent years, brings the total of these institutions to ten.

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[4] Russell, Ibid.

In 1962 Governor Romney appointed a "Blue Ribbon" Committee on Higher Education in Michigan. This committee recommended, in October of 1963, that the new state constitution to be placed before the Legislature in 1964 establish a State Board of Education with authority to serve as a general planning and coordinating body for all levels of public education and to advise the Legislature on financial requirements. If these provisions are enacted into law, they may at this late date give Michigan a firm base for planning a more efficient higher education system.

University of Michigan Planning

During the decade of the 1950's, the University of Michigan doubled in size. By the end of the decade however this growth rate had come practically to a standstill. Limited state financial support prevented further growth for several years, for the University's governing body elected to hold the lid tightly on growth rather than risk the possibility of diminishing their educational standards.

The University now estimates that it can probably allow expansion from its present enrollment, approximately 31,000 students on the Ann Arbor and branch campuses, to 40,000 students by 1970.

The key problem facing the University is where this growth can take place, for it is felt that the space limitations of the Ann Arbor campus will require much of the growth to take place at branch campuses.

The University's own planning activities have been centered in three principal program areas: (a) the development of branch campuses; (b) improvement in utilization pf present instruction space; and, (c) improvement in the efficiency of the teaching process.

To help relieve the congested Ann Arbor campus, the University has launched a "north Campus Development" on a tract of land two miles north of the present campus. Several of the University's research units have been relocated to the buildings on this campus and new structures are planned to house the School of Music, the School of Architecture and the School of Education. So far as possible, this campus will be developed for "self-contained" research units and for graduate schools which might more easily be isolated from the main campus. A shuttle bus service facilitates movement of students to and from the Main Campus facilities.

In 1954, the University established a branch campus at Dearborn, and in 1957 established another branch at Flint. These are senior college branches offering only upper-division course instruction. They are located adjacent to and are planned and managed in close cooperation with existing local community junior colleges. Each presently enrolls approximately 7,500 students. Both of these campuses, being located in heavy industrial areas, place major emphasis on engineering and business administration courses. The Dearborn branch, though, offers a liberal arts curriculum and a teacher-training program.

Because state funds have not been made available for major expansions of academic staffs and physical plants the University has diligently investigated programs which will improve teaching efficiency so that they might accept more of the responsibility for the state's increasing college population.

Improvement of Space Utilization

The University is working to implement a series of recommendations made in staff studies by the Legislative Study Committee on Higher Education.

Among the staff recommendations which have now been adopted are: (1) a heavier use of "unpopular hours" in the weekly schedule of classes; (2) lengthening the weekly schedule in which classes are held; (3) adjustment of instructional programs so that classes may be held on more days of the year. Other recommendations under consideration are a restudy of the necessity of laboratory instruction for students who do not intend to specialize in subjects customarily taught by laboratory methods, and a "repackaging" of course units so as to fit better into instructional periods available.

The Russell report prophetically commented, "Improvements in the utilization of space may require the abandonment of some cherished academic traditions and customs in the scheduling of classes and in the entire arrangement of the academic program."[5]

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[5] Russell, Ibid.

The changes, however, seem not to have been unbearably drastic. In any event, changes both mild and drastic are probably destined to be the lot of most large institutions facing problems of growth.

The Russell study pointed out that provision for the physical plant facilities to take care of probable increases in the number of students attending colleges and universities in Michigan would require, in all the Michigan institutions combined, about sixty million dollars each year for an eighteen-year period. Even this huge amount would not allow for the replacement of present buildings and equipment as they become outworn and obsolete. The report stated:

> Sums of the magnitude suggested are clearly beyond anything that has ever been provided in the past in Michigan. No one with a realistic view of the economic situation in Michigan could possibly conclude that next year the tax appropriating bodies and the philanthropic donors are going to embark on a continuing program of annual support of capital outlay in the institutions of higher education to the extent of sixty million dollars a year. ... In the meantime, student enrollments are continuing to increase... and the instructional program for the students who will attend college in the next few years must somehow be housed.
>
> There seems to be only one solution possible, mainly to discover means by which the present ratio of plant capacities to student enrollments can be altered, without damage to the scope and quality of the educational program.[5]

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[5] Russell, Ibid.

Year Round Operation

Most of the Michigan institutions of higher education have now gone to some form of year-round operation on a regular semester basis.

Reflecting the traditional independence of the several institutions in the state and the lack of coordination in this area, the State University at East Lansing and some of the other higher education state institutions have adopted a four-semester plan, while the University of Michigan at Ann Arbor has adopted a three-semester plan. This has made difficult a smooth articulation with the semester-ending periods of secondary schools, and with other state and private institutions.

The "trimester" plan is to be installed at the University on a gradual basis, beginning with the summer sessions of 1963 when the academic calendar was changed to two 15-week regular semesters and a 7 and one half week summer session. When necessary additional funds are voted by the Legislature, the summer session will be changed to a regular third semester.

Improvement of Teaching Efficiency

Teaching Methodology: On September 1, 1962, on recommendation of the Vice President for Academic Affairs, The Regents of The University of Michigan established the Center for Research on Learning and Teaching. This was the outgrowth of the recommendation by the faculty committee appointed to study improvement of teaching.

This Center is charged with the study of new and improved methods of teaching and with providing assistance to the faculty in the task of presenting effective instruction of the highest quality. It offers its services as consultant to faculty members and to department chairmen, and upon request will study course presentation methodology and suggest plans for improvement. It will then follow through on recommendations by making measurements of the effectiveness of student learning in the new course presentation and evaluate the areas of fiscal efficiency in the suggested programs.

The committee's recommendations were supported, in part, by the following statements:

> The faculty of the University of Michigan has expressed continued concern in recent years for the further improvement of its own instruction and has repeatedly recommended, in one form or another, substantial formal assistance. The problems have grown in magnitude. ... Teaching fellows and new instructors handle a large portion of undergraduate instruction without benefit of minimal aid of training in the problems of education. Senior staffs are faced with increasing enrollments without benefit of increased assistance with resulting increases in the amount of time required to carry out the teaching function. ...
>
> There is a persistent feeling that at least some of the material taught with traditional methods could be handled more efficiently. At the same time there is considerable ferment associated with a variety of technological teaching aids or tools which hold some promise of aid to the instructor

> carrying out his task. Among these tools are aspects of programmed instruction, TV instruction, and audio-visual aids.[7]

Since its establishment in 1962, the Center has developed new and more efficient teaching programs in medicine, nursing and engineering and is currently preparing suggested teaching programs in political science, modern languages, economic and education.

Dr. Stanford Ericksen, Director of the Center, discussing the "sacred cow of small classes", indicated their research so far shows that just as much learning can take place in large-class lectures whether they are delivered "live" or by television. He aruges that if lecture content is made more meanful, regardless of its mode of transmission, better learning will occur.

He also stated that their studies of the degree of learning in freshmen science courses suggests the possibility that laboratory sessions are not needed. He commented, "It is hard to justify the degree of learning which really takes place in these labs. The situation is one of using valuable teaching manpower (and valuable space) where it is least needed".[8]

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[7] *Memorandum of Recommendation for the Establishment of A Center*, University of Michigan, Sept. 21, 1962.

[8] Interview with Stanford Ericksen, Director of the Center for Research on Learning and Teaching, University of Michigan, Arpil, 1963.

Language Laboratory: A large and technically sophisticated language teaching laboratory is used for presenting the drill work portion of language instruction to large class groups under the supervision and monitoring of a teaching assistant. The facility provides individual booths where students can pursue independent study by dialing to receive any particular lesson in any one of a great number of language courses.

Dr. Rand Morton, Professor of Spanish, has been conducting a three-year experimental program in complete self-instruction of introductory Spanish by means of this teaching laboratory. The published report on this program indicates a remarkable degree of success.[9]

This laboratory facility, in the manner in which it is utilized, has enabled the language departments to accept increasing numbers of students.

Summary

The case of the University of Michigan presents an interesting study in internal planning in response to the problems of growth. Because the fiscal circumstances of the state made large scale expansion of physical plants and faculty manpower impossible, the University, of necessity, was forced to look more to its own resources of unutilized space to accomodate as much expansion as possible, and to improve the efficiency of its teaching functions to provide the faculty manpower for expanded teaching projects.

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[9] Rand Morton, The Language Laboratory as a Teaching Machine, The University of Michigan, Ann Arbor, 1961.

Less spectacular than the heroic large-scale planning of the University of California, Michigan's internal planning and internal improvements offer considerable prospect of allowing the University to accept increasing responsibility for the state's higher education enrollment growth. With a somewhat smaller growthproblem, and with the prospects of improved state financial assistance, the University's plans will most probably enable it to meet the challenge.

CHAPTER III

THE UNIVERSITY OF ILLINOIS

The University of Illinois entered the decade of the 1960's as the fifth largest university in the United States. On the basis of expansion plans now becomming reality it may emerge from this decade in second or third ranking in size of student enrollments.

An extended period of legislative indecision marked by struggling attempts to formulate effective coordination of its state-controlled higher education institutions resulted in a delay of statewide planning for growth almost until the tidal wave enrollments was up to its campus gates. Now with the tidal wave a very present reality, Illinois appears to have created substantive organization of its higher education system and will have its Master Plan for Higher Education in the State of Illinois ready by the end of 1964.

The coincidence of dates is prophetic of the state's late start in planning. 1964 is the year when the natal "class" of 1946 reaches its 18th birthday and will be ready for college enrollment. And 1946 was the year when the nation's all-time high of 3,411,000 babies were born--over a half million more than in just the previous year. Allowing for even modest "lead time" to secure legislative enactments, and to convert enactments into dollars, and to convert dollars into working programs, vivid illustration is afforded of the disaster of late planning.

This indictment must not be overly severe, for indeed much progress has been made on meeting the growth problem prior to development of comprehensive statewide planning. Furthermore, this indictment of delay in legislative planning for state institutions of higher education can be layed at the doorstep of every state higher education system--including that of California whose Master Plan is serving as the model for the Master Plan of Illinois and of a score of other master plans.

Size of the Growth Problem

Assessment of college and university enrollment growth in Illinois was made by the Illinois Commission of Higher Education in 1957. This study indicated that while total population of the state would grow approximately 40 per cent between 1950 and 1977, its college-age population would grow by approximately 80 per cent. Total enrollments in the state's private and public institutions of higher education were predicted to more than double, rising in 1977 to 140 per cent of the 1950 levels. Total enrollments of

344,000 students were predicted for that future year.[1]

The University of Illinois predicts modest enrollment increases at its Urbana Campus for the remainder of this decade. The enrollment of 24,000 students at Urbana is expected to reach 28,000 by 1965 or 1966 and this is presently foreseen as the enrollment limit for this campus. The University's great growth will come at the new Chicago Campus now under construction and due to admit students in late 1964. It is anticipated that this campus will accomodate 20,000 students by 1970.[2]

State Planning for Growth

In 1950, the Higher Education Commission of Illinois commissioned a study of the structure of the state supported system of higher education in Illinois by John Dale Russell. Like Russell's study for the state of Michigan, this study concerned itself largely with a determination of the amount of unused space existing in the higher education institutions. It also studied the admissions policies of these institutions, and asked each to estimate its maximum capacity for the fall of 1955 based on certain population trend assumptions. The report also strongly recommended establishment of a statewide coordinating body, but it was nearly a decade before positive legislation could be agreed upon and enacted.

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[1] Illinois Looks to the Future in Higher Education: A Summary Report of the Higher Education Commission to the Governor and Legislature of Illinois, published by the authority of the State of Illinois, 1957.

[2] Interview with Lyle H. Zanier, Vice President and Provost, University of Illinois, April, 1963.

Of particular significance, because it was soon to be reversed, was a finding of this study that: "The need does not exist at this time for the development of a four-year degree granting program of any kind in the Chicago undergraduate division of the University of Illinois, but it feels that for several years in the future... those activities should be confined to the present level, which is substantially a two-year program."[3]

In 1955 the higher education system in Illinois consisted of nine universities, seven of which were privately supported and enrolled approximately 92,000 students; 31 separately organized liberal arts colleges, all under private control, enrolling 21,500 students; eight teachers colleges, five of them under public control, with approximately 18,000 students; and 19 institutions classified as junior colleges, 13 under public control and with enrollments of 23,000 students.

The 1957 report of the Commission of Higher Education again voiced a plea for coordinating machinery and for a continuing commission to study higher education in the state. This report faced the issue of the influential position of the private universities and colleges in the Northern third of the state, particularly the Chicago Metropolitan area, in making the following statement:

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[3] Study of the Structure of the State Tax Supported System of Higher Education in Illinois, John Dale Russell, Staff Director, Illinois Commission of Higher Education, 1951.

> It has come to the attention of the Commission that certain areas of the state, generally metropolitan ones, should be studied intensively to determine what the present needs of higher education are, how these needs are likely to develop in the future, and how they may best be met. The Commission has developed, for example, college-age population projections and enrollment estimates for the Chicago Metropolitan area as a basis for further studies designed to determine the special needs of that area.[4]

The report also recommended that a sight be acquired and suitable quarters constructed to permit removal of the Chicago undergraduate division of the University of Illinois from its "temporary" postwar location at Navy Pier. It did not take the step of recommending a full, four-year, complete University establishment in Chicago.

Shortly after the Commission issued its 1957 report, however, the General Assembly of the State of Illinois adopted a resolution urging creation of a four-year undergraduate division of the University of Illinois in Chicago. In 1960 the people of the State approved a Universities Bond Issue of 160 million dollars, fifty million dollars of which was specifically allocated to construction of the Chicago Campus.

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[4] Illinois Looks to the Future in Higher Education, Ibid. p. 23

In 1959, what had been a teacher's college at Carbondale, became the University of Southern Illinois with its own Board of Trustees and it launched an aggressive expansion offering doctoral programs. Other teachers colleges had become universities in name, if not in character, although they remained under the control of a single board. Some, encouraged by the success of University of Southern Illinois, attempted to secure their own independent governing board.

This situation led, in 1961, to an enactment of the State Legislature creating a Board of Higher Education with considerable authority over all state controlled higher education institutions in Illinois. This act specifically ruled that the governing boards of the universities and teachers colleges "shall not hereafter undertake the establishment of any new unit of instruction, research or public service without the approval of the Board." It then authorized the Board to:

> ....Analyze the present and future aims, needs and requirements of higher education in the State of Illinois, and prepare a Master Plan for the development, expansion, integration, coordination and efficient utilization of the facilities, curricula and standards of higher education for the public institutions of higher education in the areas of teaching, research and public service formulate the Master Plan and prepare

> and submit to the General Assembly and the Governor drafts of proposed Legislation to effectuate the plan".[5]

With this legislative enactment, Illinois now had coordinating machinery by which to administer its system of higher education. The form of organization of this Board gives it greater authoritative control over the various institutions than the more permissive control given by California to its Coordinating Council. It is considerably more of a "Super Board" than the voluntary Michigan Council of State College Presidents.

University Planning for Growth

The University of Illinois, like many other state universities such as those of Georgia, Indiana, Ohio, Oregon, Texas, and Wisconsin, was founded in a small community at a considerable distance from the major cities of the state. With the movement toward urbanization during and after World War II, the University of Illinois suffered in the competition with urban universities and colleges, most of them private institutions.

The population in these urban centers have demanded educational opportunities on a broad scale equal to those provided by the older institutions in the rural areas. The urban people wanted institutions which would offer programs of university scope, available at low cost, and within commuting distance. L. A. Glenny, now associate director of the Illinois Board of Higher Education, in 1959 pointed to this situation and commented on the problems it raised in relation to this situation, there undoubtedly was specific reference to the broad-scale university planning for growth. His remarks, while general in nature had particular relevance to the University of Illinois' Urbana-Chicago controversy:

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[5] Illinois, Senate Bill No. 766. Approved August 22, 1961

> ...Existing colleges and universities, both public and private, tend to oppose the establishment of new institutions unless they are able to exert some control and prevent unfair competition. Thus the problems of financing and planning higher education are compounded both for the legislatures and the institutions.[6]

After its long struggle, the University of Illinois has now received its authorization to develop its four-year degree granting branch campus in Chicago where undergraduate, graduate and professional training instruction will be provided. It will be the only four-year, publicly-controlled university in the Chicago metropolitan area. Construction of this 20,000 student campus is already underway. Designed for a compact urban area, this will be a "commuter campus", with little or no University provision for residential students.

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[6] L. A. Glenny, Autonomy of Public Colleges: The Challenge of Coordination, McGraw-Hill, New York, 1959.

Approximately half of the undergraduate students now at Urbana come from the Chicago Metropolitan area. As the Chicago Campus develops, it is probable that a great many, if not most, of the Chicago students will be attending the new campus. This, in turn, will provide the classroom space and living accomodations at Urbana so that it can absorb a greater proportion of the state's new college enrollments in the coming years. It is expected that the Urbana campus will grow to approximately 20,000 during and after the "shift" of students to Chicago.

Improvement of Teaching Efficiency

The University of Illinois was one of the pioneers among American universities in their experiments with the use of new media of instruction. They were broadcasting educational radio in 1934 and educational television in 1955. Experimental programs utilizing closed-circuit instructional television in classrooms was started in 1955. In more recent years programs have been conducted utilizing electron "language Laboratories", teaching machines, and audio-visual devices and materials in projects designed to both improve the quality of instruction and make that instruction more efficient from the standpoint of cost.

Instructional Television: Pre-recorded televised lectures are now offered for ten credit courses in departments of sociology, economics, library science, physical education, hygiene, education, and engineering. About 3,500 students are enrolled in these courses each semester. Lectures of outstanding ability in these departments are selected to prepare the courses for television; and, with the aid of television producers, and graphics and visual specialists, lectures for each course are pre-recorded. The instructor has full control of the course in which the recordings are played and is given unlimited privileges for editing and re-recording particular lectures so as to keep the material up to date. Television is also used for freshmen orientation and for library orientation courses.

In addition to the full course presentations by television, the medium is used to televise laboratory demonstrations in microbiology, physiology, and psychiatry as well as at the Schools of Medicine and Dentistry in Chicago.

These programs have been of material assistance in lowering the unit costs of instruction, making more efficient utilization of their teaching manpower and, they are convinced, in improving quality of the instruction.

Non-Classroom Teaching: Since 1960, the University has been engaged in an experimental program of broadcasting lectures in Sociology 104-105, "Community and Society" for reception by the enrolled students in either a campus classroom or in their dormitories. Listening-discussion groups have been organized in the dormitories, and in the campus classroom under the direction of trained student discussion leaders. These are honor students who have taken the course and who preview each taperecorded lecture and discuss it with the professor prior to the group meetings.

The University feels that this program develops interest in independent study and offers some possibilities for efficiencies in the allocation of instructional time and the utilization of classroom spaces. As is the case with other televised courses, these lectures are repeated in successive semesters with the instructor editing or re-recording lectures to improve the course presentation and keep it current with new literature in the field.

Office of Instructional Resources--New Chicago Campus: Capitalizing on the experience the University has had with classroom television and other instructional media, the new Chicago Campus of the University is being built around a building complex known to house the Office of Instructional Resources. This complex will be housed in the University library, and will contain studios for the preparation and recording of televised lecture courses and facilities for editing, re-recording, and playing these taperecordings over an inter-building closed-circuit transmission system; laboratory classrooms equipped with teaching machines for course utilizing this equipment for programmed learning systems' language laboratories with electronic recording-auditing-playback equipment; and studios and workshops for the preparation of visual materials for use with these instructional media as well as for conventional classroom use.

The Office of Instructional Resources will operate as a service unit responsible for planning, developing and administering these technological aids to instruction and for advising and assisting faculty members in using them.

By making such a facility available to the new faculty members who will staff this branch of the University, department chairmen expect to encourage a more imaginative use of these media for more effective teaching presentations. Use of these facilities is expected to result in a more efficient utilization of teaching manpower and lower the cost of instruction.

It is expected that recorded lecture material for course offerings will be inter-exchanged between the Chicago and Urbana campuses.

Summary

The University of Illinois is counting on its Chicago Campus development to enroll 9,000 students when it opens in late 1964, and that by 1970 it will accomodate approximately 20,000. Because there are presently more than 10,000 students from the Chicago area attending the Urbana campus of the University, it is expected that the new campus will take many students who would otherwise go to Urbana, thus creating space at the later campus which will absorb a considerable share of the new students who will be seeking college admission in the decade following 1964.

Based on the experience and long experimentation with the instructional media at Urbana, these technological aids are expected to contribute materially to the twin problems of faculty shortages and availability of classroom space to meet growing enrollments.

CHAPTER IV

THE UNIVERSITY OF MIAMI

Many universities and colleges founded in the 20th Century have savored of the opportunity to "build a University, not for the past, but for the "Late Twentieth Century". Some have dared to be boldly innovative; for most prophesies of this era indicate that teaching technology will advance as much in the latter half of the Century, as research technology did in the first half, and that quality of instruction will have to be extended to previously unimagined numbers of students.

The University of Miami, founded in 1925, grew to a position to size and respect in burgeoning post-war Florida and now looks to the future with modern techniques of organizational planning and advanced concepts of efficient teaching methodology. This University, privately controlled and non-sectarian, plays a prominent roll in the structure of higher education in a state which is experiencing a population expansion and an educational enrollment explosion comparabile only to that of California.

Offering a broad liberal arts program at the baccalaureate, master's and doctoral levels, as well as graduate training in

Medicine, Law, Education, Business Administration, Engineering and Music, it "competes" with the publicly controlled state university system of Florida for students, for prestige, and for endowments, grants and research contracts. In company with the publicly controlled sector, it has embarked upon a program of expansion for the decade of the 1960's which will enable it to share responsibility for the ninety three per cent increase in college enrollments anticipated in this decade.

Not only has this private University dared to expand, it has dared to break from some of the older traditions of the education establishment and innovate new concepts of instructional communication, new teaching methods and new plant facilities designed especially for these new methods and concepts.

The Size of Growth

Miami presently enrolls approximately 14,000 fulltime undergraduate students as well as between three and four thousand part-time students in their Evening College and special daytime curriculum offerings.

In 1960, the University launched its "Ten Year Plan" with the expectation of accomodating 20,000 fulltime students plus 5,000 part-time students by 1970. The detailed planning of this program calls for an expanded building program and incorporates its University

College Plan, a unique program of lower division instruction.

One of the key determinents of expansion of this University--as it is of the expansion of other universities throughout the country--is its ability to recruit a prestigious faculty of scholars in sufficient quantity and quality of teaching capacity to support an ambitious expansion program. Its approach to this problem, while it is still evolutionary as much as it is revolutionary may offer a model to other institutions.

The Miami Ten Year Plan

The University College Plan

Curriculum: Miami's University College Plan, inaugurated in 1960, is based on a four-semester curriculum program of nine non-elective units per semester and six elective units, all related to a general education program. The three non-elective courses are structured for progressive presentation over the four semesters of the lower-division University College program.

Development of this curriculum and its teaching methodology was based on a rationale consisting of four objectives: (1) to raise the academic standards of instruction and improve the broad liberal arts foundation for upper division work and specialized study programs; (2) to make more efficient use of the University College professorial teaching manpower; (3) to reduce the costs of instruction; and, (4) to reduce freshmen and sophomore dropouts through increased academic involvement in a continuing program.[1]

Teaching Spaces: Miami's commitment to the new two-year lower division curriculum and its teaching techniques is underscored by the construction of a new $600,000 University College Building, the design of which is completely integrated with the requirements of this new instructional program.

This structure, which will accomodate 2,400 students at one time in a cluster of eight air-conditioned and windowless classrooms, is equipped for maximum use of the new communications media.

The classrooms are formed in a cluster around a central octagonal area, or "pit", which contains the projection equipment for prerecorded television lectures, "live" lectures in which a variety of visual materials and motion pictures may be projected, prerecorded science demonstrations transmitted from a campus laboratory.

Each of the large classrooms contains an electronic-console-podium from which the instructor can operate the projections of films, slides and other audio-visual aids which appear on a large rear-projection screen which forms the front wall of the pie-shaped classrooms. If a portion of a lecture or an entire lecture is to be presented by pre-recorded television, the televised image also appears on this screen.

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[1] Interview with Paul Vonk, Dean of University College, University of Miami, May, 1963. The author is also indebted to Dean Vonk for much of the information on the University College curriculum discussed herafter.

Seats in the classrooms are equipped with audience-response mechanisims which make it possible to give examinations and obtain other responses from a class. These data can be relayed to a computer for instantaneous use or stored for later examination.

Adjoining the classroom complex is a wing which includes a fully-equipped television teaching studio, control rooms, offices, faculty conference rooms, and storage.

Teaching Methodology: The three basic non-elective University College courses are inter-discipline study programs grouped into three subject areas--the humanities, the social sciences, and the natural sciences. The lectures in each course are given by professorial rank teachers, drawn from the University academic departments, whose disciplines comprise the subject fields of these three basic courses.

The Humanities course, for each of the four semesters, is made up of five classroom hours of instruction (for three credit units). The classroom meetings are scheduled as follows: (a) two 50-minute televised lectures; (b) one 50-minute seminar-discussion meeting, with the class divided into groups of fifteen students each who meet with a faculty member drawn from the teaching staff in the related discipline; (c) two 50-minute writing laboratory meetings, with 60 students meeting together in a laboratory room equipped with a form of teaching machine built into long writing tables. A portion of the meeting is devoted to standardized drill instruction and the remainder devoted to the students' original writing. These meetings are presided over by a proctor who may be a graduate or upper-division student--or a housewife from the Miami community with an AB degree who has been given training for this program.

The Social Sciences course is structured with three weekly 50-minute televised lectures plus two or three seminar-discussion group meetings per week. In most weeks, the third seminar meeting, at which attendance is optional, presents a guest speaker whose lecture is televised and transmitted to the seminar meetings. Speakers have included city, county, and state officials; visiting dignataries; newspaper editors; and other community leaders.

The four-semester Natural Sciences course devotes itself in the first year to the physical sciences and in the second year to the life sciences. Three lecture-demonstrations are presented by television each week. Not all of these are completely televised presentations; some are "live" lectures illustrated with pre-recorded demonstrations televised from laboratories, films, and slides projected into the lecture hall. In addition to the lectures, students attend small-group section meetings each week. The membership of each section meeting is set up according to three student levels which reflect student abilities, interests in science, and whether the student is planning to go on with a science major in the upper division of the University.

There are approximately 4,600 students enrolled in University College. Since each is required to take all three of the basic four-semester courses, there are between 1,500 and 2,000 students enrolled in each course. The total enrollment of each course is divided into sections of approximately 300 students each (the seating capacity of each of the University College Building lecture halls). Thus there are five or more sections to which each lecture presentation must be repeated.

The University feels that it is overcoming some of the "impersonal" aspects of this teaching system with the seminar-discussion meetings each week which are conducted by regular University faculty members. Furthermore, by the use of the mass media for transmitting the basic lectures in each course, they are more likely to be able to offer the students instruction by an authoritative scholar in each of the numerous disciplines combined under the three basic interdisciplinary courses.

This teaching method has resulted in a saving in teaching time (instructor-manpower hours per student), and an improved deployment of available professorial level instructors. Dr.

Samuel F. Harby, Director of the Audio-Visual Department, explained this as follows:[2]

> We expect to save considerable teaching time by scheduling large groups in the new building at once where we can concentrate on appropriate instructional methods. The teaching time saved will be reinvested in the kind of supplementary teaching which television is incapable of doing in mass. We will devote a good deal of attention to small group discussions, counselling and guidance, and to laboratory practice; so by supplementing mass media of instruction with small group instruction, we will offer a more balanced type of teaching.

Space Utilization: This class meeting system configuration indicates the high space utilization which is achieved in the University College classroom building. The twelve instructional spaces in this building (six 300-seat lecture halls, plus two more which are sub-divided into three smaller rooms each) are scheduled almost continuously from 8 A.M. to 4:30 P.M. and from 7 P.M. to 10 P.M. Many of the classrooms are scheduled between 4 and 6 P.M. for writing laboratory meetings, remedial instruction classes and occasional repeat-lectures for additional review. In addition to the three basic courses, a number of other lower-division and upper-division classes hold their meetings in this building. Most of the twelve instructional spaces are scheduled with class meetings between 55 and 65 hours each week. This is a space utilization rate nearly double that obtained by most other universities and colleges.

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[2] S. F. Harby, "Building for the Future, "Audio-Visual Instruction, December, 1960.

Other Aspects of the Ten Year Plan

The newsworthy University College Plan has been described in detail because of its unique method of handling a major portion of this University's growth problem.

Additional aspects of the Ten Year Plan call for a major fund-raising effort, an expanded building program, and new facilities to allow expansion of the University's Medical Center and School, its Law School and other special training program.

Use of Instructional Media In Other Courses

Closed-circuit television and the other instructional media are used in a number of courses other than those described above, both in lower-division and upper-division instruction. A number of years of experience in the use of these media preceded construction of the new University College Building.

Television is used in courses in psychology, accounting, chemistry, as well as in freshmen orientation. During registration periods, 2,400 freshmen are given simultaneous instructions in how to complete registration forms and complete other records. This has enabled the college to reduce the registration period to one day.

These additional televised presentations originate either from the studio in the University College Building or from an originating room in another building which has provisions for a limited number of students to attend the actual televised presentation and react with the instructor. A cable distribution system is extended to a number of small classrooms.

Language Instruction Laboratories

A very considerable start has been made in the use of electronic audio-recording-playback facilities in two language laboratory installations. The University plans to enlarge these facilities, which will allow the language teaching staff to instruct a greater number of students without corresponding increases in the faculty manpower. Since the major part of elementary language instruction involves repetitive drill, which the language departments feel can be done just as well in a laboratory with modern equipment as in a classroom, a larger number of language classroom hours will be scheduled in these laboratories, as additional facilities are made available. Language department instructors are careful to point out, however, that they do not intend to attempt total language teaching in the laboratories, preferring to retain at least one or two of the five classroom hours each week for in-person instruction by a faculty member. By using teaching assistants to conduct and monitor the laboratory drill periods both monetary and professorial resources can be used to better advantage in the period of expanding enrollments.

Broadcast Television

The University has made use of free time offered by local commercial television stations to present public service programs and instructional courses.

One of these is an in-service teacher-training course offered to the public school teachers in Dade County. Lectures are broadcast for in-home viewing and the enrolled teachers come to the Campus for laboratory and discussion meetings.

The University has also presented supplementary and remedial training for high school graduating senior to enable them to make up deficiencies in their secondary work and thus meet the University's admission requirements and entrance examinations.

Some experimental work has been done in offering freshmen college courses to advanced high school students to enable them to obtain a start on college credit prior to entering the University. The lecture protions of these courses are broadcast over television; enrolees come to the Campus for discussion and examination meetings.

Summary

The planning-for-growth programs of most larger institutions, particularly those in the public sector, have a tendency to concern themselves (at least in the early stages) with major expansions of physical plant facilities. The University of Miami, though it is also engaged in new building projects, has concentrated its primary efforts on achieving a higher classroom space utilization and a more efficient use of teaching manpower.

Miami's unique approach to the growth problem may not fit into the growth plans of other institutions, but it is apparently meeting many of Miami's expectations in this area. Its full-scale commitment to this new curriculum and new method of communicating instruction is a leading pioneering effort in this direction and will may well be a pace-setter for many other universities.

PART II: Patterns of Planning

CHAPTER I

MASTER PLANS

Detailed planning of organizational structures and of executive administration is a modern necessity for universities entering the era of growth. Conant, in 1955, wrote, "State by state, citizens must reappraise the publicly supported educational system from top to bottom and decide what adjustments must be made to handle the vast increase in the numbers of the youth."[1]

Cooperative and coordinated planning by institutions of common purpose and common geography is necessary if these institutions, both public and private, are to be of greatest value to the citizenry in its demand for higher education in volume. This planning will be dictated, says McConnell, "...not so much by educational philosophy... as by the historical, cultural, economic, political and social forces that have shaped and are shaping American society."[2]

The four key universities and university systems examined in this study offer examples of the general patterns for planning which are emerging in this decade. These have a certain comonality, though often contrasting modes of execution.

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[1] J. B. Conant, The Citadel of Learning. New Haven, Yale University Press, 1956, p. 77).

[2] T. R. McConnell, in Hubris, Man and Education, op. cit. p. 115).

Late Planning

If it may be described as a "pattern", the most common characteristic of all planning schemes seems to be their lateness of initiation and implementation.

This might be explained by the lack of recognition of the fact that today's problem of growth is not the result only of the population expansion, but the result of the meeting in time of three expansive forces--the population explosion and its accompanying increase in the proportion demanding a higher education; the expansion of knowledge growing out of highly industrialized and sophisticated society; and the expansion of demand for Education's services by this modern society. These are the forces which may have been overlooked or ignored, for the demography of growth has been apparent for nearly two decades.

Everyone has been aware of the greatly increased birth rate following World War II and the increasing trend towards greater participation in post-high school education. We have witnessed the wave of school attendance generated by the birth rate incriment of 1946-47 ever since the children entered kindergarten in the early 1950's, and we have followed that wave as it has rolled up through the primary and secondary grades. On the whole, higher education has done less to prepare for this wave than did the elementary institutions.

Even the University of California, with its model of planning, acknowledges a tardiness in implementation of plans for its new campuses in sufficient "lead time" to accomodate the projected growth rate. These new campuses opening in 1965 will be at least five years late in their preparation to assume a desired share of the burden of the University's predicted enrollment growth.

In Illinois, sporadic and almost ungoverned expansion commenced prior to organized and comprehensive planning. Coordinated planning is only now in the making. The lateness of plans to meet the problems of overlapping curriculums, and the diversity of regional needs of the agricultural, industrial, commercial, and professional communities has now necessitated unusually strong statewide directorship and central control.

Michigan, hampered by its state's financial problems, had to defer the major portion of its higher education planning until a clearer financial path was seen, and at this late date is attempting to weld bonds of unity around its autonomous and enterprising state colleges and universities.

While most institutions and most state legislatures will decry "crash programs", it is certain that they will make their appearance in many states in the latter half of this decade when the pressure of demand for college enrollments brings unbearable influence on hopes for modest growth and orderly commitment to the totality of this problem.

The Junior College Movement

"Community Colleges"--the name by which the two-year junior colleges are now more generally known--have become the broadest and fastest developing area of post high school education in many states. They hold promise of offering the greatest single contribution to solution of higher education's enrollment growth problem.

Highly responsive to the local needs of its community and to its commerce and industry, community colleges are also responsive to the educational needs of a broad segment of local youth seeking education beyond high school. The tri-partate function of these colleges--occupational training, general education, and preparation for continuing higher education--satisfies the demand for living-at-home higher education, and makes a major contribution towards solution of the enrollment growth problems of the four-year degree granting institutions.

The spectacular growth in accpetance of two-year colleges is testimony to the vitality of the junior college movement. Public junior colleges now enroll approximately one-fifth of all students in public higher institutions. A rapid expansion of the two-year college in the decade ahead can be easily predicted.[3]

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[3] Leland D. Medsker, The Junior College, McGraw-Hill Book Company, New York, 1960).

In all but a very few sparsely settled states, the recommendations of various study commissions have called for some type of decentralized plan for the development of their higher education institutions. Most of these have specified the enlargement of the system of local community junior colleges. Conant, in The Citadel of Learning, commented on the value of junior colleges to the development of a better American system of higher education:

> If they (two-year colleges) were vigorously supported and expanded as the wave of increased numbers hit the universities, the distribution of youth among the various types of educational institutions might be radically altered without diminution of the percentage of youths receiving an advanced education. If this were done, the composition of the student bodies in the universities would change without any reduction in size; the emphasis would shift toward professional education. That such a shift would be beneficial for those institutions now aiming at becoming first-rate scholarly institutions few would question. On the other hand, if some such development does not occur, the pressure of applicants on the state-supported universities will force a rapid and enormous increase in the teaching staff. The quality of the faculty is bound to deteriorate and more than one promising center of research in professional education would become a training institution.[4]

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[4] Conant, op. cit. p. 71

Robert Gordon Sproul, one of the early champions of the junior college movement, pointed out how junior colleges could be a major factor in enabling the University of California to discharge its particular functions better, by relieving the pressure for lower division enrollments. He stated ". . .the physical facilities--libraries, laboratories and classrooms, as well as the available faculty--can be used more efficiently and effectively for the special purposes that universities are uniquely designed to serve. . ."[5]

California in 1959 had 87,700 fulltime students enrolled in its junior colleges. It is predicted that in 1970 there will be 209,200 fulltime enrollments and that this will represent 41.3 precent of the fulltime enrollments in all higher education institutions in the state.[6]

The three states of Illinois, Michigan and Florida are among the most active in the development of the junior college movement. While the master plans for higher education in Illinois and Michigan are still in preparation, the recommendation for expansion of junior colleges is predicted to be a key feature of their higher education plans for coping with growth problems. Florida, with 29 junior colleges has already taken an active lead in this movement.

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[5] Robert Gordon Sproul, "Many Millions More," The Educational Record, American Council on Education, Washington, Vol. 39, No. 2, pp 101, April, 1958.

[6] American Association of Junior Colleges Directory, 1959 American Council on Education, Washington D.C.

Junior colleges are generally built on more compact campus sites. They do not have to provide extensive facilities for faculty and graduate student research. Faculty concentration is on the teaching function. Junior colleges are able to offer broad curriculums of occupational training, liberal arts terminal programs and college preparatory programs on a less expensive total basis than the large university complexes. However, it must be pointed out that this does not necessarily mean that it costs less to educate students in junior colleges. Data collected in connection with the Restudy of Higher Education in California showed that when only teaching expenses were considered, the cost per student credit hour in some junior colleges was as high or higher than in the lower divisions of the state colleges and the larger campuses of the University. In technical-vocational courses of junior colleges a relatively small number of students are often in classes for long periods of time thus raising the unit cost above that for academic subjects. Furthermore, on the larger university campuses many of the student credit hours of lower division teaching is done by graduate students employed as teaching assistants.[7]

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[7] See T. R. McConnell et. al. A Restudy of the Needs of California in Higher Education, California State Department of Education, Sacramento, 1955., and T. R. McConnell, in Hubris (ed.) Man and Education, op. cit.

Because they perform a particular function in a state's higher education, and because they are situated in local communities where little if any special student housing is necessary, it can be safely predicted that in most states the junior colleges will accept an increasingly large share of the burden of higher education enrollment growth.

Organization and Distribution of Campuses

The key organizational decision for both large and growing institutions involves the location of decision-making authority. Development of organization plans between the alternates of centralization and decentralization of that authority is a major decision not only of large modern industrial organizations, but of large university complexes as well.

The single-campus institution has a greater tendency to centralize its authority and perhaps finds greater efficiency and expediency in decision-making in such a pattern. The more widespread and more complex institutions tend towards decentralization, though this is by no means general pattern.

Most universities originated as single, one-campus institutions--and many have remained so. The geographical extension of the larger state university organizations to various regions of their states has developed different types of organization patterns which are of interest to those who seek models upon which to plan the future expansions needed to cope with enrollment growth.

A number of universities have established small "satelite" branch campuses, often of a specialized nature and offering a limited service geared to specific needs. An example of this pattern of growth is seen in the case of University of Michigan, which has established upper-division branch colleges at Flint and Dearborn and another branch campus nearby to Ann Arbor to relieve crowded conditions on the home campus. The University of Indiana has also expanded in this manner, through the establishment of twelve "Extension Centers" at key cities throughout the state where specialized undergraduate curriculum offerings are geared to specific local needs. In these cases, the general pattern of organization under the central authority structure of the home campus has not been changed by the addition of branch facilities.

The University of Illinois, with establishment of the Chicago Campus, offers an example of the enlargement of a "branch campus" to a complete university offering. While there will be some areas of specialized research and teaching offered only at Urbana or at Chicago, the largest areas of the curriculum offerings at Chicago will be the same as the offerings at Urbana. The organization pattern established for this new campus--which will soon grow to the size of the main campus and probably go on to surpass it--has been established under direct administrative lines of authority from Urbana. The governing authority at Urbana will supervise the administrative units and academic departments at Chicago on a line-by-line authority basis. Supervisory responsibility only will be assigned to the administrator at Chicago.

As the Chicago Campus grows in size, and as it acquires unity and becomes "institutionalized", it may be speculated that greater autonomy will be demanded--and the tail may come to wag the dog.

In the case of California, expansion has resulted in the development of whole new campuses which in themselves are new institutions, counted as complete university complexes, and each under a high degree of administrative autonomy. They are held together through central authority on key policy matters and supported by extensive university-wide staff advice and coordination. This organizational form contrasts markedly with that of the University of Illinois.

Permanent Coordinating Agencies

A new organizational structure which states and state systems of higher education are developing to implement their planning for growth is the Coordinating Council.

Probably no organizational mechanism is so little understood and so hampered by ignorance of its desirable and optimum functions as the coordinating agency.

Webster defines "coordinating" as, "to bring into a common action; to combine (equals) for harmonious action." It implies a freedom of action for cooperating parties within the framework of common interests and common goals.

We have had opportunity to examine three types of coordinating agencies which have merged from the struggle to organize higher educational systems on a broad geographical basis, usually a state.

A form which might be described as "compulsory coordination" has been established in some areas. This is a highly structured organization which brings all institutions under ultimate governance by a common administrative board. Such organization, of course, offers the advantage of obtaining by executive order or mandate conclusive decisions and prompt executive implementation. Such organizations tend to be attractive to state legislatures for they can therein relieve themselves of the necessity for analytical studies and decisions on broad policy which are usually beyond their particular competence. The coordinating agency, and not the legislature, thus bears the burden of recommendations on inter-institution budget distribution as well as inter-institutional struggles over status and proper role. Such "super-boards" tend to impair the administrative autonomy of the individual members and often create sources of friction which outweigh the advantages of regulated inter-institution competition. The question of whether these super-boards will offer their states an organizational pattern for higher education which is sound, lasting, and peaceful will find contradictory opinions.

The State of Illinois, as it emerged from a period of inter-institution competition and unregulated expansion, in 1961 created a State Board of Higher Education, giving it wide areas of authority over the operation of all public institutions of higher education in the state. Undoubtedly a product of necessity, this Illinois Board faces the challenge of adopting a modus operandi which will accomodate the natural desires of its institutions for individual advancement, academic distinction and individual goal attainment.

Another organizational form, which might be described as "permissive coordination", has taken form in organizations which provide mechanisms for cooperative action and self-adopted regulation. Such organizations are based on the philosophy of preserving individual autonomy within a framework of statutory definitions of the function, role, and certain of the operating policies of the "coordinated" institutions. Such a body recommends, but doesn't legislate; it advises, but does not order; it has little governing authority; it secures concensus through persuasion or influence. This is a sensitive body and one which, if it survives the test of early trials, can offer ideal union.

This type of coordination is, in the main, descriptive of the Coordinating Council on Higher Education in California. This organization, still in its infancy, is seeking the means of carrying out the mandate of its legislative creation, and accomodating the many areas of voluntary cooperation which were left to its member institutions. Its eventual destiny has not been determined, for it still faces the challenge of developing effective cooperation among diverse institutions under a mandate to enforce cooperation. Whether this is an unmanageable paradox, only the experiences of the next few years will determine.

Most informal of the organization patterns is that which might be described as "coordination through association." Such organization has been that of the Michigan Council on State College Presidents which was formed in 1947.

The recently proposed new constitution of the State of Michigan provides for a State Board of Education to regulate all educational institutions, including higher education, but its powers have not been fully defined. It does specifically propose separate and constitutionally autonomous trustee boards for the ten state colleges and for the universities in a pattern similar to the governing structures of the University of Michigan. John Dale Russell, author of the 1958 recommendation for a formalized coordinating structure, recently expressed the opinion that the new Board "should be a solid first step toward coordinated planning without infringing on the autonomous right of each institution to establish its own policies."[8]

Summary

As statewide organizations develop and carry out their plans to meet the problems of growth, coordinating agencies will become essential to the requisite care in administration of public funds. In spite of all their struggles of birth, determination of organizational structure, and degree of alloted authority, these agencies will be major forces in influencing the planning for growth. Concensus on their ultimate role will await, in many cases, the most urgent demands and even crises which most probably will arise in the latter part of this decade.

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[8] The Michigan Daily, November 22, 1963, p. 1.

CHAPTER II

CAMPUS BUILDING PLANS

The national effort to satisfy the growing demands upon higher education will require, on the part of the American people, a financial commitment to education greater than they have ever before been called upon to make. Former Secretary Fleming of the Department of Health, Education and Welfare said in 1960, "The present rate of expenditure for [higher education], which is now approximately $1 billion a year, if only maintained during the coming decade, will leave a facilities gap of staggering proportions."[1]

Plant Expansions

Expenditures for college physical plant expansions have doubled since 1952 through institutional incomes largely from normal sources and gifts and grants. However, projection of the future support from these traditional sources indicates an annual shortage of $500 million annually in the early 1960's and growing to an annual deficit of $1 billion a year, or more, toward the latter part of this decade.[2]

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[1] Dr. Arthur S. Fleming, Hearings, March 21, 1960, Sub-Committee on Special Education, The House Commission on Education and Labor.

Secretary Fleming, testifying on the need for federal support to higher education said, "If the nation is to meet the challenge of giving its youth the best possible training to fulfill responsibilities in a highly complex world, it would seem to be in the national interest that the federal government continue to be a partner with other existing sources in providing national funds to meet the projected deficit."[3] Federal funds for higher education construction have been appropriated by the federal government and additional measures in this area are receiving legislative attention.

Building programs for the expansion of campus plant facilities have been given first priority in every state and area where the governing boards of private and public institutions could reasonably foresee an availability of funds to at least allow for projected-capacity-planning and a start on the construction programs.

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[2] Office of Education, U.S. Department of Health, Education and Welfare, Washington, D. C.

[3] Fleming, op. cit.

Different patterns of planning for these plant expansions have appeared in different institutions and different systems--each reflecting the expected and projected economic resources available through traditional channels; plus the amount of federal support likely to be available; and reflecting the degree of commitment of each institution to the national responsibility for increased capacity.

A major factor in establishing the pattern of physical expansions has been the determination by institutions of the maximum enrollments they feel can be handled at a single campus site. Some institutions, assuming availability of financial resources, feel that their campuses can be expanded to as much as forty thousand students. Others settle on lower figures as the maximum enrollment their institutions can accomodate without making undesired alterations of the educational environment.

The University of California Regents have settled upon the figure of 27,500 students as the maximum enrollment to which any campus will be allowed to grow. Haverford College, on the other hand, is very reluctant to increase its enrollment beyond the present 450 students and will enlarge in small incriments and only as their trustees feel that enlargement can be accomplished without destroying the "close-knit intellectual community." Obviously, each policy is the reflection of local demand for enlargement working upon the desire of academic leaders to maintain what they regard as the essential characteristics of their institutions.

California and Florida have developed whole new campuses, each a self-contained institution, and a number of other states have made similar commitments to new institutions. The University of Michigan policies direct that the major part of their physical plant expansion take place at smaller branch campuses at centers removed from the home campus at Ann Arbor. The University of Illinois, like Indiana and other state universities established in rural areas, foresees only modest plant expansions at their home campus and have therefore committed themselves to policies of establishing and enlarging branch campus facilities in other parts of the state.

Increased Plant Utilization

With the awakening realization of the magnitude of the growth problem, many state agencies and governing boards of private institutions immediately undertook studies of the rates of space utilization in their institutions' present plant facilities. Much of this research enearthed suprising data. These findings also touched upon sensitive areas of academic theories and administrative fears of misconstrued lay interpretation of these findings. It was also realized that, regardless of changes in academic theories against which space utilization norms might be measured, improvement in this area could not become the major source of future needs in building plant space. With some logic, therefore, it became the general practice to put into effect only the obvious and easily-attained reform measures for higher space utilization, and to pass quickly on to drives for funds for new building programs.

Undoubtedly, there will come a time for most institutions when sources of new building funds will become more parsemonious, and it can be predicted that at this time there will be a new revival of interest in the greater efficiency of higher space utilization.

Notable among the comprehensive studies of space utilization have been those of John Dale Russell in his work for the state systems in Michigan, Illinois, New York and Georgia; the work of Harris Eurich at Stanford University, of Donovan Smith at the University of California and the latter's contributions in this area to the California and Western Conference Cost and Statistical Study.[4]

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[4] See California and Western Conference Cost and Statistical Study, University of California Printing Department, Berkeley, 1955.

The University of Miami, in its University College building, has attained one of the highest space utilization rates of any of the larger-enrollment universities.

The comments of John Dale Russell and of Stanford Ericksen contain reference to the use of costly space for laboratory sessions for introductory and survey science courses. They argue, and with some academic logic, that a great deal of the time and laboratory space devoted to these courses for non-science majors is a luxury which can be ill-afforded in an era of greatly expanded demand for advanced science instruction and advanced science research. This, however, involves a pedagogic principle which by no means finds universal acceptance.

Although there are numerous obstacles in the way of efficient utilization of space--some of which are deeply imbedded in academic tradition--recent events indicate that dozens of colleges and universities are attacking them vigorously.

Year-Round Operation

Some forty institutions have now established formal plans for operating their campus classrooms on a year-round basis.[5]

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[5] Sidney G. Tickton, The Year-Round Campus Catches On, The Fund for Advancement of Education, New York 1963.

All of these plans are aimed at the objective of increasing space utilization during the ordinarily low enrollment period of the summer months. They will permit the student who desires to do so to earn his bachelor degree in three rather than the usual four calendar years without requiring him to carry more than a "normal" fulltime course load.

Of the institutions examined in this study, Michigan has committed itself to a "trimester" plan of dividing the academic year into three approximately equal semester periods. The University of California has committed itself to a program of quarterly semesters to begin in 1965. The University of Illinois has not committed itself to policy in this area and for the time being will continue to operate two semesters with interim summer sessions during the summer months. This also is the policy of the University of Miami.

Year-round operation, as an ideal of efficiency, however is not without its problems. Chancellor McHenry of the University of California at Santa Cruz, addressing the American Council on Education recently, pointed out:

> Although greatly overrated among some legislative and business critics of higher education, year-round operation does offer some real prospects for expanded student capacity. As many of us have discovered, however, trimester and four-quarter calendars cost additional money both in capital and operating categories.[6]

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[6] Dean E. McHenry, The Impact on Colleges and Universities of the Commitment to the Enlargement of Opportunity in Higher Education. American Council on Education, 46th Annual Meeting, 1963.

In the coming years of this decade and of the next, when university governing boards will be going to state legislatures, agencies of the federal government, and private foundations seeking funds to implement the necessary large-scale building programs, they can hardly expect generous response when the facts show that they are operating with millions of dollars of plant idle for almost one-third of the year and one-half of the working day.

Each of the universities examined in this study and hundreds of others, are now coming to realize that they cannot continue to follow a policy of building their new buildings now and worrying about efficiency of space utilization later. Each has instituted operating policies aimed at more efficient utilization of their physical plant facilities.

CHAPTER III

IMPROVING EFFICIENCY IN THE TEACHING PROCESS

Education in general--the ivied halls of higher education in particular--seems to dread the word "efficiency." It is a word from business, and the traditional academician feels strongly that educational institutions must not be businesses.

Modern academia, which now must live and breathe in the atmosphere of a dynamic, industrialized, and a broadly sophisticated society, is learning to adopt its organizational forms and practices to new conditions of existence. The modern university complex has found that academic excellence is directly associated with an enlightened fiscal soundness and efficiency of the type which business and industry require of their institutions if they are to survive and contribute usefully to society.

Vaisey and Debeauvais, made the following observation in their report of a conference organized by the International Association of Universities in 1960:

> The effectiveness of the use of resources in education raises a fundamental issue. It would clearly be wrong to apply simple tests of productivity to education--to judge it as though it were a brain producing plant. But there are more effective and less effective ways

> of using resources; usually the more effective way is the best way culturally and educationally, as well as economically the most efficient.[1]

Through greater efficiency of administrative management, the educational dollar can be stretched much farther under the direction of imaginative faculty and administrators working together for a common purpose.

New Teaching Methods

There are different technologies in teaching, as there are in other "production" processes. Different methods of teaching require different combinations of capital and labor. The new emphasis on science and technology, the new reliance upon the science of computers in uncovering new knowledge in a broad variety of disciplines from genetics to the social sciences, the new technologies which the communications arts have brought to learning transmission, may require substantial changes in the use of educational capital and labor.

The outlook for the future of colleges and universities makes it imperative that they utilize every new idea and technique which might improve the quality of education and at the same time put into practice more efficient and economically feasible methods.

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[1] J. Vaisey and M. Debeauvais, "Economic Aspects of Educational Development," in Education, Economy, and Society. ed. Halsey, Floud and Anderson, Free Press of Glencoe, 1962.

The universities examined in this study, and many others across the nation, are developing new teaching methods in efforts to improve the efficiency of their teaching processes. These measures, in each case, are oriented to the institutions' dual problem of maintaining and improving instruction standards and of making this instruction available to their rapidly increasing student enrollments.

The new University of Miami undergraduate curriculum and its unique method of teaching the basic interdisciplinary courses is a prime example. The University of Michigan, through its Center for Research on Learning and Teaching, has been instrumental in the development of new teaching methods in several academic areas of that University. The Universities of California, Illinois, Miami--and scores of other institutions depart from traditional teaching methods in some of their large-enrollment courses employing closed-circuit television. They conduct lectures and laboratory demonstrations in central campus teaching studios or laboratories and transmit them to numerous small recitation groups meeting with individual instructors or teaching assistants in the classrooms.

Faculty attitudes, the economic factors of faculty supply and demand, and faculty willingness to assume a posture of responsibility in meeting society's increased education demands, are all key determinents of the degree of efficiency which may be introduced into modern teaching practice. The nature of scholars has always been--and properly so--that educational soundness is the province of the teacher and that compromise of this principal forced by administrative mandate defeats the pruposes of the administrator and the teacher.

Faculty Manpower Utilization

Efficiency should be measured not only in terms of dollar savings, but, more importantly, in terms of whether there is best use being made of skilled teachers, and whether best use is made of modern technology, part of whose function is to save skilled manpower.

Periodic critical review of established teaching methods, most faculty administrators will agree, is important to the vitality of a university's teaching function, whether or not more efficient measures are developed. The era of enrollment growth is now demanding that appraisals of new teaching methods give primary attention to methods which offer prospects of better utilization of education's human resources.

Among the steps taken by these and other universities to improve their teaching efficiency and utilization of manpower are: (1) realistic reviews of student-faculty ratios; (2) encouragement of independent study towards reduction of the number of hours the student spends in class; (3) reduction of the number of courses offered, by controlling proliferation of specialized courses and eliminating courses not appropriate to the college level or to the established role of the institution; (4) increased use of the new media of instructional communication such as television, language laboratories, films, and teaching machines.

Student-Faculty Ratios: Beardsley Ruml has taken issue with Robert Hutchinson and others in criticising generally held opinions that the lower the student-teacher ratio in an institution, the higher the quality of its education; as well as persistence of the belief, notwithstanding numerous studies showing the contrary to be true, that students taught in large classes do not learn as well as students taught in small classes-- "in spite of the centuries-long history of effective lecturing by talented teachers of appropriate subject matters."[2]

Most universities and colleges, facing problems of growth or faced with present or predicted disparities between rate of enrollment growth and rate of increase in financial support, are looking towards methods of improving the utilization of their faculty manpower. This is important not only as a means of improving efficiency, but as a means of maintaining a distinguished faculty who must be given time to pursue scholarly investigations, time to write for publication, and time to maintain the greatest possible personal contact with their students.

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[2] Ruml, and D. Morrison Memo to a College Trustee, New York, McGraw-Hill Book Co., 1959.

Increasing student-faculty ratios would seem to work contrary to this goal and indeed it would if such increases were applied to every course offered. However, many universities have found it possible to increase average student-faculty ratios and at the same time avoid undue encroachment on the non-classroom time of their faculty members by scheduling larger lecture groups and by employing mechanical aids in instructional communication.

It is well to mention at this point that mathematical calculations of student-faculty ratios often result in confusing indices, particularly when inter-institution comparisons are attempted, for many variables (some significant, others insignificant) often enter into the calculation of these ratios.

We found in this study a number of programs, initiated as desirable pedagogic improvements, which were oriented to saving faculty manpower hours and which tended, in some measures, to increase student-faculty ratios. They will be mentioned later in connection with their more important primary objectives.

Independent Study: Many new teaching programs have been developed in efforts to increase the amount of independent non-classroom study. They have as their objectives the development of self-instruction learning habits which will better serve the student as he advances his scholarly pursuits in both college and adult life. They also give the university some advantages through having more of the learning take place in libraries, study carrels and dormitories rather than in formal classrooms under faculty supervision.

The role of programmed learning devices--the so-called "teaching machines"--can be utilized to its maximum value in independent study programs. Since their development some thirty years ago by Pressey of Ohio State University and Skinner at Harvard, teaching machines and programmed learning have found increasing attention among educators--and they have been, as well, the subject of much controversial discussion among educators and laymen alike.[3] To date, they have found broader acceptance in pre-college instructional programs where the costly processes of program preparation can be syndicated and employed on a broader basis. As the problems of growth come to be more pressing at the college and university level, more serious consideration is being given to them as supplements or alternatives to some of the traditional classroom teaching. As programs of independent study are becoming more prevalent in university teaching, there is increased experimentation with use of these devices.

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[3] See Lumsdaine and Glaser, Teaching Machines and Programmed Learning: a Source Book, Department of Audio-Visual Instruction, National Education Association, Washington, D. C., 1960.

The University of California has directed attention and experimental work to the application of these devices to instructional programs. The University of Illinois, in their new Offices of Instructional Resources at the new Chicago Campus, is developing facilities for programming and preparation of courses for presentation through this medium. The University of Miami is using programmed instruction through a simplified form of teaching machine as one of the elements of instruction in their introductory English Composition courses. The Center for Research on Learning and Teaching at the University of Michigan has applied programmed learning techniques in an elementary engineering course and is holding periodic seminars with faculty members in a program designed to encourage their use in the university's teaching programs.

One of the primary advantages of audio recorder-playback devices commonly used in "language laboratories" is the opportunity it affords to remove from the supervised classroom large amounts of the rote learning through drill work which is necessary in elementary language instruction. Of the four universities examined in this study, the University of Michigan has developed the largest and most sophisticated language laboratory installation. This facility is enabling the foreign language departments to place greater emphasis on independent study, thus relieving classroom scheduling problems and reducing the manpower requirements for language instructors. Michigan has conducted a satisfactory experimental program in complete, non-classroom self-instruction of elementary Spanish with this language laboratory facility.

Organized programs of credit-by-examination are another device for promoting independent study. These in some instances relieve crowded classroom scheduling and, to some extent, faculty load requirements. The University of California, like numerous others, offers students the opportunity to satisfy such basic requirements as English Composition proficiency and fundamentals of American History through comprehensive examinations as alternated to traditional classroom courses.[4]

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[4] Programs of credit-by-examination and other programs of acceleration have been instituted in a number of prestigous universities and colleges. While not included in the scope of this study, mention should be made of the programs at the University of Buffalo, at Wisconsin, Minnesota, Kentucky and many others surveyed by Bonthius, Davis and Drushal and reported in their publication of The Independent Study Program in the United States (Columbia University Press, New York, 1957). While these programs were developed without reference to growth-problems, some offer relevant models for institutions burdened by large enrollments. They upgrade the quality of their students and of the institution's prestige by lifting their gifted honor students from the "lock-step" instruction procedures which have a tendency to become established as enrollments expand too rapidly.

Reduction of Course Offerings

Most larger universities, over the course of several decades, have accumulated superfluous courses which through tradition or inertia are carried in their catalogs year after year. Course proliferation in upper division and graduate work is a phenomenon of the expansion of knowledge in many disciplines, particularly in the sciences.

Furthermore, universities have a tendency to accumulate many courses of remedial, elementary and introductory instruction which might better be left to secondary schools, extension divisions, or ancillary institutions.

As colleges and universities go into the era of increased enrollments, and as they face possible fiscal deficiencies, many are initiating programs of self-study aimed at reducing the number of course offerings. Such activity was not investigated at each of the four institutions examined in this study, but it is known that the University of California has instituted such a program, and over recent years it has resulted in a desirable reduction in courses no longer necessary or appropriate to its institutional role as established under the Master Plan.

New Instructional Media

We have had the opportunity in these studies to examine a number of cases of the use of the newer methods of instructional communications, such as television, language laboratories, films, and teaching machines. Each of these media--instructional television, in particular--are coming to play a more important role in the development of new teaching procedures.

Among the users of closed-circuit instructional television, the greatest apparent use of the medium has been made at the University of Illinois, followed closely by the University of Miami. The University of California has introduced the use of television on six of its campuses and its adoption in teaching programs has been steadily increasing. The University of Michigan has made only minimal use of closed circuit instructional television, but is now planning facilities and cable distributions systems which will allow it to make fuller use of this medium.

The University of Michigan has made the greatest developments in the use of language laboratories. The other three institutions are each working in this area and anticipating larger developments as enrollments in elementary language courses increase. Audio-visual devices are standard in university instruction programs. Teaching machines, still lacking widespread accpetance at the university level, are receiving increasing attention at each of these institutions.

These communications devices offer many opportunities to increase the availability of an authoritative faculty to greater numbers of students. Their use can be predicted to increase as the pressures of the growth problem become more strongly felt in the next decade.

In the opinion of the administrators of each institution, these media probably will not reduce their total costs; they help bring about a smaller increase in costs than would otherwise be the case as student enrollments rise; they hold promise of reducing building space requirements for large auditoriums and other classroom and laboratory areas. It was generally agreed that, in those areas where instructional media are carefully and painstakingly planned, they have resulted in better teaching and improved learning.

There is little prospect that these media will "revolutionize" university teaching methods. They may strongly influence them, by increasing the availability of visual materials and detailed demonstrations. Their primary applicability, however, is to a relatively small percentage of the total course offerings in most university catalogs. In the case of the University of California it is estimated that this is approximately five percent. These courses, however, represent as much as twenty five percent of combined course enrollments.[5]

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[5] Paltridge and Harr, Survey of Potential for Instructional Tele- at the University of California, op. cit.

Summary

It is apparent from these studies there is no single method of reducing the costs-per-student of a university or university system. Cost factors in university operation are closely related to accepted traditions, the established standards of educational offerings, the degree of institutional orientation to scholarly investigation and research involvement. Cost, in almost any university setting, are not easily pliable in their ratio to the size of the student body.

Nevertheless, we have had the opportunity to observe many programs and practices which are aimed at increasing the fiscal efficiency of university operation. They each hold considerable promise of worthwhile advancement in this area. It is obvious that if our institutions of higher education, both private and public, are to assume a responsible share of the increasing burden of demand for higher education, every step in this direction must be taken so long as it does not impair the essential quality of education and of the scholarly pursuit of new knowledge.

CHAPTER IV

CONCLUSIONS AND IMPLICATIONS

The proposition that society is the key determinent of the forms which its institutions of higher education will finally assume has been stressed in this study.

A number of distinct forms, as seen in the patterns for planning to meet the growth problem, have emerged in this decade. These plans are still unproved; for their proving of value to meet the crisis will be tested only when the height of the crisis is upon us. Most have been formally documented--some have been enacted into legislation--but they have not assumed their final forms, for by their nature they are living documents and subject to change as new problems arise.

It may be concluded, however, that as the eventual forms of these institutions evolve they will reflect in the future, as they have in the past, the basic propositions which have historically shaped American institutions of higher learning. Thus:

(1) Plans for state-controlled institutions will reflect the political temperment and the fiscal well being of their respective state governments.

(2) Plans will reflect the ambitions, goals, and levels of educational sophistication of the student clientele each institution serves.

(3) Plans will reflect the cultural requirements and the technological needs of the dominant professions, industries and skilled occupational groups of their clientele communities.

(4) Plans will reflect the traditional "personality"--the peculiar goals, needs, and characteristics--of the individual universities and colleges.

(5) Retention of the quality of the educational product they dispense will be held as the terminal goal of planning.

Growth, even for the largest universities and colleges, is necessary, yet each seems to be striving to "make the university seem smaller even as it grows larger..."[1] For the emblems of the ancestoral teaching academy persist in the ideal of a "closely knit community of scholars." Imitations--and many worthy imitations--of that ideal will persist, but the certitude of equality of educational opportunity for all which only now is coming into its full meaning, will forever brand the American institution of education with bigness.

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[1] Clark Kerr, The Uses of the University, op. cit.

Most universities and colleges still have not found a solution to the financial problem of bigness within the framework of traditional sources of funds. As they seek remedies for the "growing pains" of increased enrollment, they will seek increasing aid from the federal government while at the same time resisting any encroachment on their local sponsorship and local autonomy. Federal aid-to-education programs have been formulated in the last decade in a sincere attempt to influence local educational communities to plan for expansion and without interfering with their local autonomy. It cannot be denied, however, that to the extent federal aid influences growth, it will influence change.

The movement towards schemes which will improve internal operating efficiencies, begun in the latterpart of the preceding decade, will undoubtedly gather momentum as problems of growth become more accute in the next decade. New and more efficient methods of large scale teaching will be found, and they eventually will earn acceptance by the new generation of teachers.

The challenge of this era will be met, and the organizational forms and the academic procedures which have taken form in recent years will become the basic patterns for the future.

Transferrability

To ascribe general transferrability of the findings of this study of four institutions to the whole of American higher education would be a dangerous endulgement in generalities.

But the problem of growth is a common problem to most of the two thousand institutions which comprise this "system." The choices of solutions to the problem are very limited. In spite of divergent autonomies, there is a great comonality of goals, of basic requirements for the teaching process, and of limited financial resources. For this reason, the changes in traditional procedures and the schemes for improving administrative efficiency found in this study are probably transferrable to a great number of institutions.

To any of the public systems of higher education in the fifty states, the experiences in both individual planning and inter-institution cooperative planning are highly transferrable. The California Master Plan for Higher Education has already become the model for numerous state planning programs.

The institutional long-range planning of each of these four large universities is, in a large measure, transferrable to the seventy other colleges and universities in the United States which now enroll ten thousand or more students on their campuses.

The interchange of ideas related to problems of growth, through the many regional and national affiliations and associations of higher education institutions, is providing the channels of communication through which individual experiences can be made available for the benefit of all.

Appendix

Appendix A

Past and Projected U. S. Population and College Enrollments

Year	Total[1] Population	% Increase	Estimated College Age (18-21) Population	% Increase or Decrease	College Degree-Credit Enrollment	% Increase
1939	131,028,000		9,582,000		1,364,815	
1955	165,270,000	26.1	8,577,000	10.5	2,653,034	94.4
1960	179,647,000	8.7	9,605,000	11.2	3,570,018	34.6
1965	193,643,000	7.8	12,153,000	26.5	5,203,000	45.7
1970	208,199,000	7.5	14,573,000	19.9	6,936,000	33.3
1975	225,520,000	8.3	15,967,000[2]	9.6	8,588,000	23.8

[1] Projections assume decline in fertility rate to 1949-51 by 1965-70.

[2] Extrapolated from U. S. Bureau of Census Projections of Populations, Age Groups 15-19 and 20-24, assuming decline in fertility rate to 1949-51 by 1965-70. Statistical Abstract of the United States, 1960, p. 6; U. S. Bureau of the Census.

Sources: Statistical Abstract of the United States, 1960, p. 5, U. S. Bureau of the Census; and U. S. Office of Education, compiled in Fact Book of Higher Education, p. 233.

Appendix B

Number of Births in the United States, Adjusted for College registration, 1940 through 1961.

Entering College Class	Birth Year	Birth in Thousands
1958	1940	2,559
1959	1941	2,703
1960	1942	2,989
1961	1943	3,104
1962	1944	2,939
1963	1945	2,858
1964	1946	3,411
1965	1947	3,817
1966	1948	3,637
1967	1949	3,649
1968	1950	3,632
1969	1951	3,823
1970	1952	3,913
1971	1953	3,965
1972	1954	4,078
1973	1955	4,104
1974	1956	4,218
1975	1957	4,308
1976	1958	4,255
1977	1959	4,295
1978	1960	4,258
1979	1961	4,282

Source: Compiled from (a) Historical Statistics of the United States, Colonial Times to 1957, p. 52.

(b) Statistical Abstract of the United States, 1962, p. 52, Bureau of the Census, U. A. Department of Commerce and published in A Fact Book on Higher Education, p. 32; American Council on Education, Washington, D.C.

Appendix C

Projected Changes in U.S. Higher Education

Item	1958-59	1969-70
Students enrolled at colleges and universities	3,500,000	6,500,000
Teaching staff (Full-time and part-time)	330,000	600,000
Operating expenditures	$4.2 billion	$9.3 billion
Capital expenditures	$ .7 billion	$1.4 billion
Taxes for higher education	$2.3 billion	$4.6 billion
Gross national product	$450 billion	$700 billion

Source: "Increasing Productivity in Higher Education" by Alvin C. Eurich; in S. Harris, Higher Education in the United States: The Economic Problems. Harvard University, 1959.